# CATALOGUE THERMOHYDRAULICS

STORAGE
HEATING
COOLING
SOLAR

FEBRUARY 2014

BLADDER AUTOCLAVES FOR SANITARY WATER

MULTI-FUNCTIONAL TANKS

EXPANSION TANKS FOR HEATING

TANKS FOR SOLAR SYSTEMS

PLASTO - POLYETHYLENE STORAGE TANKS
FOR ABOVE GROUND

PLASTO – POLYETHYLENE STORAGE TANKS
FOR UNDERGROUND & WASTEWATER TREATMENT

GALVANIZED/GLASSLINED TANKS

HOT WATER TANKS

ASME TANKS

elbi


THERMOHYDRAULICS

# History

**ESTABLISHED IN 1965 IN VIGODARZERE NEAR PADUA, ELBI HAS ALWAYS DISTINGUISHED ITSELF FOR ITS LARGE VARIETY OF PRODUCTS AND ITS INTERNATIONAL VOCATION. THE COMPANY HAS BEEN OPERATING FOR ABOUT 50 YEARS IN THE FIELD OF THERMO-HYDRAULICS, GRADUALLY ACHIEVING A SOLID REPUTATION AND STANDING IN THE MAJOR WORLD MARKETS.**

Originally established as a producer of hot water cylinders and central-heating boilers, after about a decade of activity in this field the company dedicated its efforts to the production of tanks for the thermo hydraulics industry. In the mid 70's Elbi began producing surge tanks and BLADDER expansion tanks, becoming one of the major European manufacturers in the field of Thermo hydraulics. In 1981, having overgrown the capacity of the Vigodarzere facility, the company moved to its present headquarters in Limena, thus expanding its production capacity.

In 1989 the company branched off into a new line of products, processing plastic materials and manufacturing rotational-moulded polyethylene tanks.

In 1990 Elbi of America, Inc. was founded in Houston, Texas. Initially the new company concentrated on simple marketing/sales activities, learning about the culture and mentality of the vast and complex American continent.

In 1994 the Green System sales division was established to manufacture and market pots for plants and flowers made of rotational-moulded polyethylene. Thus the company entered the new market of gardening, which enabled it to expand its know-how both in the technological and marketing fields.

Firmly established in the American market, in 1996 Elbi of America became the official manufacturing headquarters for the fixed-bladder tanks, thus bringing production closer to the target market.

The company's third sales division, Environment, was established in 1997 to design and produce containers and bells for selective collection of waste, and to market a wide range of accessories for urban hygiene and decor.

In 2001 a new production facility was opened.
at Modugno (BA), mainly dedicated to the manufacture of products made of rotational-moulded polyethylene. Elbi's activity in the Environmental Services started in 2006 and is mainly focused as preventive maintenance which is performed by special purpose structures (local units) where only qualified personnel are employed and adequate equipment used.
In 2006 Elbi also started the Playground Division becoming the Italian distributor of a range of playground equipment for parks and schools offering a range for children from 18 months through 16 years of age. In 2008 Elbi also entered the Well-being market, becoming the Italian distributor of a range composed of an innovative "well-being track" formed by several sporting gear that facilitates open-air physical exercise in adults and elderly people.

In 2008 a new business unit consisting of design products for the furniture market took shape. The need to manage a new brand dedicated to such target brought about a restyling of the traditional Green System Division, thus giving life to the TWENTY-FIRST Division, distinguished in GARDENART for the traditional collection of garden pots, and LIVINGART for the collection of furnishing accessories for the living market. Today, Elbi concentrates its production activities in the business divisions (Thermo-hydraulics - Environment - 21st Garden Art - 21st Living Art) whose products are manufactured in the production plants in Limena and Modugno, yet again confirming the company's industrial reality.

**TECHNOLOGY**

Active since 1981, the Limena plant is sub-divided into various production areas, each specialising In specific processes.

**MECHANICS**

The transformation of metals currently makes up around 70% of production activities, and uses technologies for: moulding, cutting and sheet bending; welding of carbon steel and stainless steel; epoxy powder painting and assembly.

The entire production process is implemented with wide use of industrial automation and robots to handle and move the manufactured parts.

Production is organised and monitored using an integrated company information system, starting with the analysis and planning of production up to sale of the end product. This information structure is supported by our Data Processing Service, which meets the particular information requirements by implementing and developing ad hoc part of the software.

**PLASTIC MATERIAL**

In the early 90's Elbi wanted to undertake a new production path by processing plastic materials, obtaining considerable results in terms of technological innovation. Elbi has been a member of ARM (Association of Rotational Molders) since 1996, an international category association that represents its members composed of rotational-moulding companies and professionals in the industry from 66 nations. The rotational moulding division has furnaces for polyethylene moulding,

7 in the main plant and 2 in the Modugno (Bari) plant. The biggest furnace can mould products with a capacity of up to 15.000 litres, among the biggest in Europe. Through rotational moulding technology, Elbi can manufacture a vast range of products in non-toxic and recyclable polyethylene: other than the first collection tanks (water. alimentary liquids, chemicals and other types of fluids). Elbi designs and manufactures design furnishing accessories, vases for plants and flowers, dog and cat houses, bins for differentiated waste collection, bins for urban waste collection and containers for composting of organic waste, thereby contributing to reduced environmental pollution.

# pictograms

 = Thermometer

 = Thermostat

 = Anode with tester

 = Magnesium anode

 = Anode with simpletest

 = Polyurethane insulation

PMAX = Max Working pressure (bar)

PSCA = Heat Exchanger max pressure (bar)

PMAX VS = Max Working pressure (bar)

PMAX VR = Max Working pressure (bar)

PPRE = Pre-charge pressure (bar)

 = Working Temperature

 = Heat Exchanger  Max Working Temperature

 = Hot water cylinder Max Working Temperature

 = Heat Accumulator Max Working Temperature

 = Sanitary DHW heat exchanger - Max Working Temperature

 = CE Approval (97/23/EC)

 = For drinking water

 = Not for drinking water

 = For heating systems

 = For air conditioning systems

 = For booster pumping systems

 = Top-Pro® internal protection

 = Glasslining anti-corrosion internal treatment

 = Water hammer arrestor

 = Suitable for chemicals

 = For sanitary hot water

 = For chilled water

= handling by forklift

= Heat accumulator for instant sanitary hot water

= vehicles transit not suitable

= Not for underground use

= For underground use only

= Packaging mm

= Capacity (liters)

= Model

= Weight (Kg)

= Height (mm)

= Side (mm)

= Diameter (mm)

= Galvanized

= Painted

= Stainless steel body

= Self-pressurized model

= For compressed air

= Hot water cylinder

= Hot water storage tank

= Stainless steel coil

= Stainless steel coil for use with steam

= Connection

= Inspection hole Ø

= Code

Serp. = Heat exchanger

= For solar systems

= ASME U Approval

= ASME UM Approval

= Population Equivalent (P.E.)

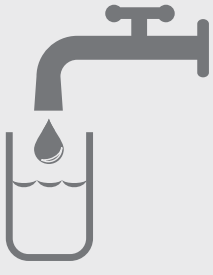
ENGLAND POLAND CZECH REPUBLIC SLOVAKIA RUSSIA

UKRAINE CROATIA U.S.A. U.S.A.

# Index

**SYMBOLS IN THE HYDRAULIC DIAGRAMS ARE LISTED IN THE SHUTTER OF THE COVER**

# BLADDER AUTOCLAVES FOR SANITARY WATER



## BLADDER AUTOCLAVES FOR SANITARY WATER

# BLADDER AUTOCLAVES FOR SANITARY WATER

**WHAT IT IS AND HOW IT WORKS**

The accumulator vessel with replaceable bladder is a device that fitted into a pressurised water system will provide system water at a pre-set, sustained pressure. Its most common application is to supply systems in which the main supply pressure is too low and a pump is fitted to boost the pressure to an acceptable level.
As system demands take place the accumulator vessel will sustain system pressure by feeding additional water into the system at the required pressure. This process will limit the number of times the pump needs to start (pump hunting) in order that system pressure remains at the optimum level.
The process is achieved by the addition of a pre-charged air cushion at higher than atmospheric pressure within the vessel shell. This pre-charged cushion is stored between the water bladder and the inner surface of the tank. Any water pressure rise (pumping) causes the cushion to be additionally compressed. As system demands arise the nitrogen cushion forces the water from the bladder into the system thus maintaining optimum system pressure.
As the retained pressure finally exhausts and system pressure falls a pressure switch will turn the pump on, re-pressurising the system and the accumulator ready for further use.
This way the accumulator will prevent the need for the pump to start every time there is a demand on the water system and will flatten the system pressure curve at the optimum pressure.
Elbi accumulator vessels with replaceable bladders are the result of 50 years of experience in the design, manufacture and installation of tanks in hydraulic systems. The range is currently the most complete on the market in terms of product availability. The range has been subdivided into various series, each of which is designed for the various applications required by modern systems technology.
All the products have been designed to comply with the most stringent international standards, mainly through the use of the latest design technology and industrial automation. The Elbi plants are on the edge of technological solutions with regard to design, production, automated welding and robot manufacturing systems.
All manufacturing processes are carried out within the Elbi plant facilities, including bladder production, which is critical as it determines the operation, life cycle and performance of the finished product. Elbi accumulators with replaceable bladder are manufactured from the highest quality UNI standard steel plate and welded using certified materials and procedures.
The versions for water-pressurisation systems, comprising the AS, AC, AF and DL series, come in capacities ranging from 2 to 5000 litres. All the models have been designed to hold potable (drinking) water and each features specific technical options to prevent the liquid from coming in contact with the inner surface of the tank. Over the years Elbi has become one of the undisputed leaders in the achievement of stringent quality standards in terms of its sanitary procedures.
All the models are designed to contain drinking water and each model offers particular manufacturing solutions to eliminate contact of the liquid with the metal parts of the tank.
Elbi' s decades of experience in international markets has lead to the manufacture of products that comply with a wide range of international regulations (CE, ASME).
Elbi accumulators with replaceable bladders also come in tailored-made versions that reflect the latest evolution of the market. Special attention paid to emerging consumer requirements has lead to the implementation of the HI-NOX series, entirely made up of stainless steel. These vessels are particularly suited for us ein aggressive environments (sea, corrosive, etc.). The technical solutions used during design of these vessels make theHI-NOX series a reference standard for bladder-equipped tanks.

**Financial benefits**

Unlike standard air-cushioned accumulators without bladder, the accumulators with bladders feature the following advantages:

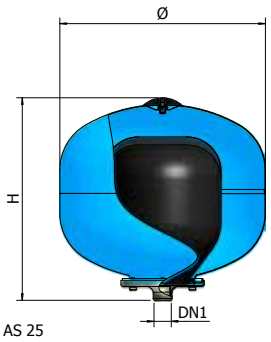
- **energy saving** reduced number of pump start-ups;
- **installation cost reduction** lack of water contact means that air is no longer dispersed into the water and therefore, there is no further need to supply a compressor to restore the cushion;
- **maintenance costs reduction** only the tank pre-charge pressure has to be checked. Additionally the bladder can be replaced, disassembled and reassembled easily in a very short time;
- **stored volume reduction** space saving;
- **water contamination risk is reduced** the bladder also serves as protection against any substance suspended in the air, such as: oil, smoke, bacteria, smells, dust, etc. that may alter the quality of water. Bladders are certified for alimentary use;
- **long-lasting** tank the fact that the bladder prevents water from being in direct contact with the inner surface of the tank significantly reduces corrosion;
- **dual purpose** this type of tank will also cushion water hammer.

# AS/AC-CE

## REPLACEABLE BLADDER AUTOCLAVES FOR SANITARY WATER

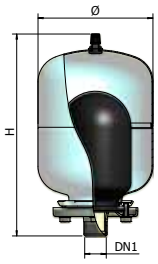
(2 -25 LITRES)

### AS 25

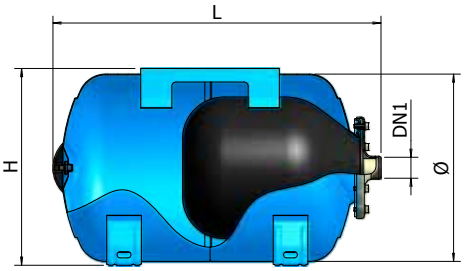



AS 25

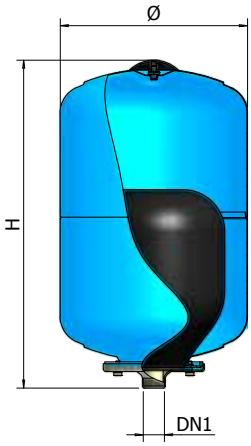
### AC-2



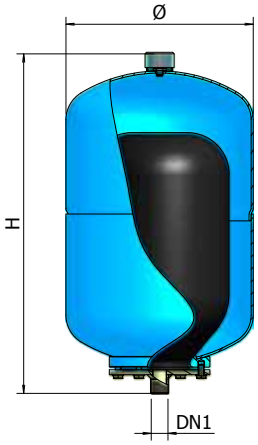

### AC 25 GPM




### AC 5-25; AFV 24




### AC 20 PN25




CE CE certified product

For drinking water

For pressurisation systems

The AS-AC series replacement bladder tanks are a valid solution for small household installations, garden irrigation systems and all other applications where small capacities are required.
All the models are supplied as standard with a bladder in EPDM; this means they can also be used as sanitary expansion tanks up to a maximum design temperature of +99°C.
The AS-25 model combines practicality and financial benefits, and is suitable for direct installation on the pump.
The AC GPM-25 model has been designed to implement small, compact type pressurization units.
CE certified.

**Characteristics:**

• Working temperature: -10° / +99°C
(Mod. AC20 PN25: -10° / + 50°C)

• Blue epoxy powder paint.
(Model AC-2: white)

• Replaceable bladder in EPDM rubber
(Model AC-2: replaceable bladder in butyl)

• Water and air completely separate.

• No contact between water and tank inner surface.

• Replaceable alimentary non-toxic bladder with elastic characteristics to enable total expansion inside the tank to ensure the best performance and longer product life cycle.

**Reference standard:**

• Declaration of conformity to essential safety requirements specified in Directive 97/23/EC (PED). (The 2 and 5 litre models are without the CE marking).

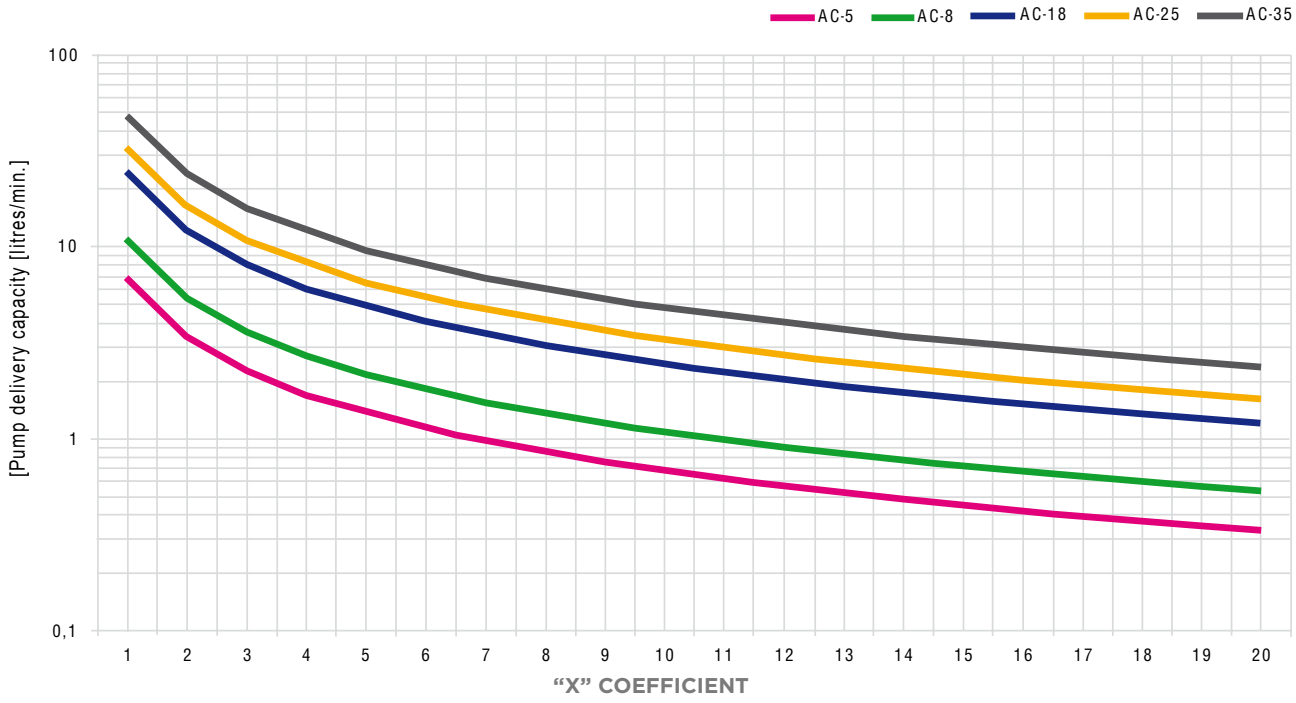
**WARRANTY: 2 YEARS**

## DIMENSIONS

| MODEL | CODE | LITRES | Ppre bar | Pmax bar | max | mm | mm | mm | DN1 | mm | NOTES |
|---|---|---|---|---|---|---|---|---|---|---|---|
| AC-2 * | A012J07 | 2 | 1,5 | 8 | +99°C | 130 | 230 | - | 3/4" | 150 x 150 x 240 | |
| AC 5 * | A012J11 | 5 | 1,5 | 8 | +99°C | 205 | 240 | - | 3/4" | 210 x 210 x 250 | |
| AC 8 CE | A012J16 | 8 | 1,5 | 8 | +99°C | 205 | 297 | - | 3/4" | 210 x 210 x 320 | |
| AC 18 CE | A012J24 | 18 | 1,5 | 8 | +99°C | 270 | 430 | - | 1" | 280 x 280 x 450 | |
| AC 25 CE | A012J27 | 24 | 1,5 | 8 | +99°C | 270 | 470 | - | 1" | 280 x 280 x 470 | |
| AC 25 GPM CE | A022J27 | 24 | 1,5 | 8 | +99°C | 270 | 290 | 470 | 1" | 280 x 300 x 470 | |
| AS 25 CE | A002J27 | 24 | 1,5 | 8 | +99°C | 360 | 365 | - | 1" | 360 x 360 x 380 | |
| AFV 24/16 CE | A032R27 | 24 | 1,5 | 16 | +99°C | 270 | 470 | - | 1" | 280 x 280 x 470 | |
| AC 20 PN25 CE | A012T25 | 20 | 5 | 25 | +50°C | 270 | 485 | - | 3/4" | 280 x 280 x 500 | |

* No CE marking

## Bladder accumulator selection chart




To make sizing easier, a chart has been drawn up to select the most appropriate accumulator according to both the working pressure and delivery criteria. Note that the chart is based on the following hypothesis: standard precharge and 15 pump starts per hour (see p. 27 to identify the "X" coefficient).

| Maximum delivery capacity of the pump [litres/min.] | Δp System working pressure 1,5 - 3,0 | | | 2,0 - 3,5 | | | 2,5 - 4,0 | | | 2,5 - 4,0 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Number of pump starts per hour | | | | | | | | | | | |
| | 15 | 8 | 5 | 15 | 8 | 5 | 15 | 8 | 5 | 15 | 8 | 5 |
| 2 | 5 | 8 | 18 | 8 | 18 | 24 | 8 | 18 | 35 | 5 | 8 | 18 |
| 8 | 18 | 35 | 50 | 24 | 50 | 80 | 80 | 35 | 100 | 24 | 50 | 80 |
| 10 | 24 | 50 | 60 | 35 | 60 | 100 | 100 | 50 | 150 | 35 | 50 | 100 |

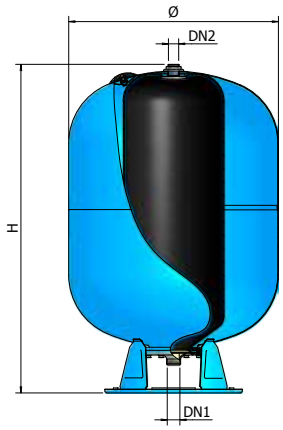
# AF-CE

## REPLACEABLE BLADDER AUTOCLAVES FOR SANITARY WATER

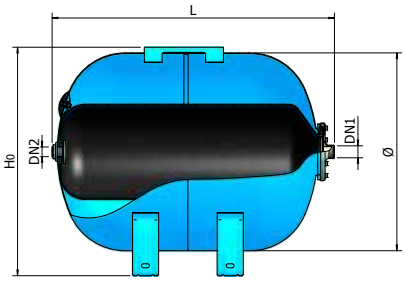
(35 - 500 LITRES)

### AFV 500 16 BAR

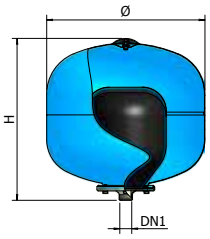

### AFV 50 - 500




### AFH 50 - 300




### AF35




CE certified product

For drinking water

For pressurisation systems

The AF series replaceable bladder tanks are suitable for most residential and industrial installations where considerable water capacities are required. The standard version supplied is 10 bar. CE certified, the AF series autoclaves are also available in customized versions in compliance with the most important international standards. The horizontal version is equipped with an universal engine support bracket to allow the pump to be fastened directly above the tank. Valve and gauge supplied on request.

Galvanized version available from 60 to 500 litres (see page 18)

**WARRANTY: 2 YEARS**

**Characteristics:**

• Working temperature: -10° / +99°C.

• Alimentary tested EPDM rubber bladder, with elastic characteristics to enable total expansion inside the tank to ensure the best performance and longer product life cycle.

• Epoxy powder paint with long duration for better protection against atmospheric agents. Blue.
Model AFV 500 16 Bar, solvent-based paint, grey.

• Water and air completely separate.

• Water completely separate from metal parts of the tank.

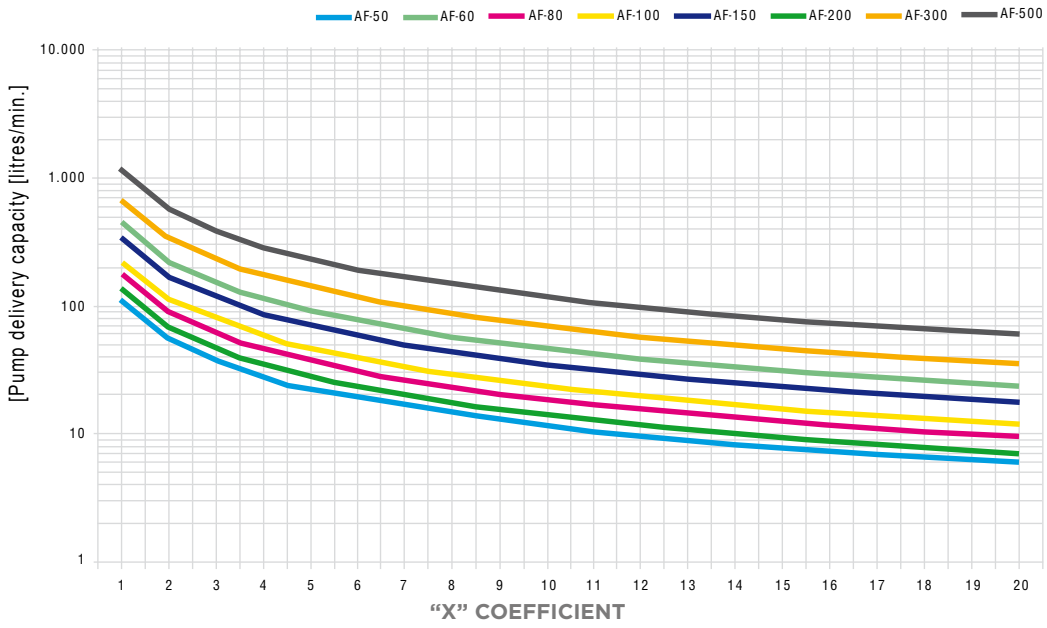
**Reference standard**:

• Declaration of conformity to essential safety requirements specified in Directive 97/23/EC (PED).

## DIMENSIONS

| MODEL | CODE | LITRES | Ppre bar | Pmax bar | max | mm | mm | mm | DN1 | DN2 | mm | NOTES |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| AF 35 CE | A032L31 | 35 | 1,5 | 10 | +99°C | 400 | 400 | - | 1" | - | 410 x 410 x 410 | |
| AFV 50 CE | A032L34 | 50 | 1,5 | 10 | +99°C | 400 | 600 | - | 1" | - | 410 x 410 x 610 | |
| AFV 60 CE | A032L35 | 60 | 1,5 | 10 | +99°C | 400 | 750 | 765 | 1" | 1/2"F 3/4"M | 410 x 410 x 760 | |
| AFV 80 CE | A032L37 | 80 | 1,5 | 10 | +99°C | 400 | 815 | 970 | 1" | 1/2"F 3/4"M | 410 x 410 x 860 | |
| AFV 100 CE | A032L38 | 100 | 1,5 | 10 | +99°C | 500 | 805 | - | 1" | 1/2"F 3/4"M | 510 x 510 x 830 | |
| AFV 150 CE | A032L43 | 150 | 1,5 | 10 | +99°C | 500 | 1030 | - | 1"1/4 | 1/2"F 3/4"M | 510 x 510 x 1040 | |
| AFV 200 CE | A032L47 | 200 | 1,5 | 10 | +99°C | 600 | 1065 | - | 1"1/4 | 1/2"F 3/4"M | 610 x 610 x 1110 | |
| AFV 300 CE | A032L51 | 300 | 1,5 | 10 | +99°C | 650 | 1270 | - | 1"1/4 | 1/2"F 3/4"M | 660 x 660 x 1290 | |
| AFV 500 CE | A032L55 | 500 | 1,5 | 10 | +99°C | 775 | 1420 | - | 1"1/4 | 1/2"F 3/4"M | 785 x 785 x 1440 | |
| AFH 50 CE | A042L34 | 50 | 1,5 | 10 | +99°C | 400 | 425 | 515 | 1" | - | 410 x 530 x 440 | |
| AFH 60 CE | A042L35 | 60 | 1,5 | 10 | +99°C | 400 | 480 | 675 | 1" | 1/2"F 3/4"M | 410 x 685 x 490 | |
| AFH 80 CE | A042L37 | 80 | 1,5 | 10 | +99°C | 400 | 480 | 720 | 1" | 1/2"F 3/4"M | 410 x 775 x 490 | |
| AFH 100 CE | A042L38 | 100 | 1,5 | 10 | +99°C | 500 | 585 | 1130 | 1" | 1/2"F 3/4"M | 510 x 730 x 600 | |
| AFH 200 CE | A042L47 | 200 | 1,5 | 10 | +99°C | 600 | 665 | - | 1"1/4 | 1/2"F 3/4"M | 610 x 950 x 680 | |
| AFH 300 CE | A042L51 | 300 | 1,5 | 10 | +99°C | 650 | 705 | - | 1"1/4 | 1/2"F 3/4"M | 660 x 1140 x 720 | |
| AFV 100/16 CE | A032R38 | 100 | 1,5 | 16 | +99°C | 500 | 805 | - | 1" | 1/2"F 3/4"M | 510 x 510 x 830 | |
| AFV 200/16 CE | A032R47 | 200 | 1,5 | 16 | +99°C | 600 | 1065 | - | 1"1/4 | 1/2"F 3/4"M | 610 x 619 x 1110 | |
| AFV 300/16 CE | A032R51 | 300 | 1,5 | 16 | +99°C | 650 | 1270 | - | 1"1/4 | 1/2"F 3/4"M | 660 x 660 x 1290 | |
| AFV 500/16 CE | A032R55 | 500 | 2,5 | 16 | +99°C | 650 | 1865 | - | G 2" | 1/2"F 3/4"M | - | |

## Bladder accumulator selection chart




To make sizing easier, a chart has been drawn up to select the most appropriate accumulator according to both working pressure and delivery criteria. Note that the chart is based on the following hypothesis: standard precharge and 15 pump starts per hour (see p. 27 to identify the "X" coefficient)

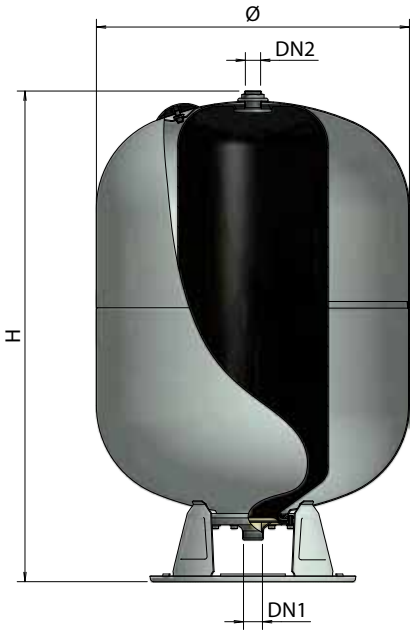
| Maximum delivery capacity of the pump [litres/min.] | Δp System working pressure 1,5 - 3,0 | | | 2,0 - 3,5 | | | 2,5 - 4,0 | | | 2,5 - 4,0 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Number of pump starts per hour | | | | | | | | | | | |
| | 15 | 8 | 5 | 15 | 8 | 5 | 15 | 8 | 5 | 15 | 8 | 5 |
| 10 | | 50 | 60 | 35 | 50 | 100 | 50 | 100 | 150 | 35 | 50 | 80 |
| 20 | 50 | 80 | 150 | 60 | 100 | 200 | 100 | 200 | 300 | 50 | 100 | 200 |
| 25 | 60 | 100 | 150 | 80 | 150 | 250 | 150 | 250 | 300 | 80 | 150 | 250 |
| 40 | 100 | 200 | 250 | 150 | 250 | 500 | 200 | 300 | 500 | 100 | 250 | 300 |
| 45 | 100 | 200 | 300 | 150 | 200 | 500 | 250 | 500 | - | 150 | 250 | 500 |
| 55 | 150 | 250 | 300 | 200 | 300 | 500 | 300 | 500 | - | 150 | 300 | 500 |
| 75 | 200 | 300 | 500 | 250 | 500 | - | 300 | - | - | 200 | 500 | - |
| 95 | 200 | 500 | - | 300 | 500 | - | 500 | - | - | 300 | 500 | - |
| 115 | 250 | 500 | - | 500 | - | - | 500 | - | - | 300 | - | - |
| 150 | 300 | - | - | 500 | - | - | - | - | - | 500 | - | - |
| 200 | 500 | - | - | - | - | - | - | - | - | - | - | - |

# AFV-Z - CE

## GALVANIZED AUTOCLAVES WITH REPLACEABLE BLADDER, FOR SANITARY WATER

(60 - 500 LITRES)

## AFV-Z 60 - 500




CE CE certified product

For drinking water

For pressurisation systems

Galvanized

The AF series replaceable bladder tanks are suitable for most residential and industrial installations where considerable water capacities are required. The standard version supplied is 10 bars. CE certified.
Safety valve and gauge supplied on request.

**Characteristics:**
• Working temperature: -10° / +99°C.

• Alimentary tested EPDM rubber bladder, with elastic characteristics to enable total expansion inside the tank to ensure the best performance and longer product life cycle.

• Water and air completely separate.

• Water completely separate from metal parts of the tank.

**Reference standard**:
• Declaration of conformity to essential safety requirements specified in Directive 97/23/EC (PED).

**WARRANTY: 2 YEARS**

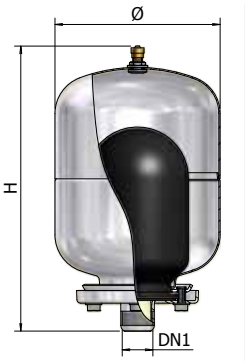
| MODEL | CODE | | Ppre | Pmax | | | | | DN1 | DN2 | | NOTES |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | LITRES | bar | bar | max | mm | mm | mm | | | mm | |
| AFV-Z 60 CE | A072L35 | 60 | 1,5 | 10 | +99°C | 400 | 750 | - | 1" | 1/2"F 3/4"M | 410 x 410 x 760 | |
| AFV-Z 80 CE | A072L37 | 80 | 1,5 | 10 | +99°C | 400 | 815 | - | 1" | 1/2"F 3/4"M | 410 x 410 x 860 | |
| AFV-Z 100 CE | A072L38 | 100 | 1,5 | 10 | +99°C | 500 | 805 | - | 1" | 1/2"F 3/4"M | 510 x 510 x 830 | |
| AFV-Z 150 CE | A072L43 | 150 | 1,5 | 10 | +99°C | 500 | 1030 | - | 1"1/4 | 1/2"F 3/4"M | 510 x 510 x 1040 | |
| AFV-Z 200 CE | A072L47 | 200 | 1,5 | 10 | +99°C | 600 | 1065 | - | 1"1/4 | 1/2"F 3/4"M | 610 x 610 x 1110 | |
| AFV-Z 300 CE | A072L51 | 300 | 1,5 | 10 | +99°C | 650 | 1270 | - | 1"1/4 | 1/2"F 3/4"M | 660 x 660 x 1290 | |
| AFV-Z 500 CE | A072L55 | 500 | 1,5 | 10 | +99°C | 775 | 1420 | - | 1"1/4 | 1/2"F 3/4"M | 785 x 785 x 1440 | |

# HI-NOX-CE

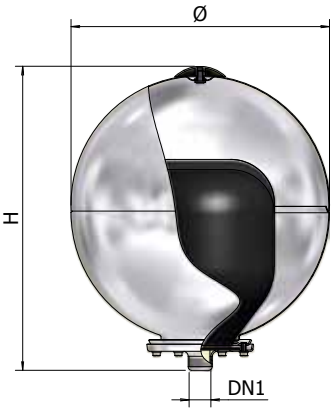
## STAINLESS STEEL AUTOCLAVES WITH REPLACEABLE BLADDER, FOR SANITARY WATER

(2-60 LITRES)

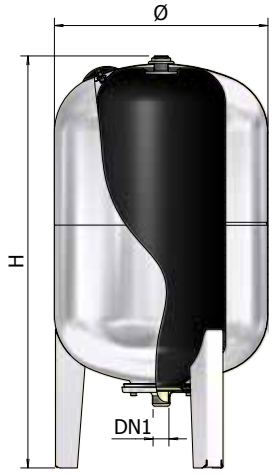
### HX-2 F




### HS 24

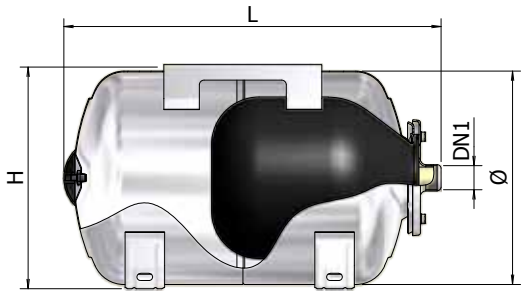



### HM 60 V




### HM 24


### HM 24 GPM; HM 60 H




CE certified product

For drinking water

Stainless steel body

For pressurisation systems

The stainless steel tanks offer top quality in the Elbi range. Designed as a stand-alone product, therefore not only as a simple variant of similar products in carbon steel, HI-NOX tanks are built based on the right processing techniques for stainless steel with manufacturing involving specifically designed equipment to process stainless steel. Particular attention was also given to the overall aesthetic appearance and product polishing.

**Characteristics:**

• Working temperature: -10° / +99°C

• The HX-2F model is particularly indicated for use as a water hammer arrestor.

• The HM and HM GPM models are indicated for use in small water lifting units where the qualitative and hygienic appearance of the water is important.

• The HM-GPM-24 model, like the traditional version in stainless steel, was designed to create small, compact type lifting units.

• All the bladder tanks in the HI-NOX are supplied as standard with an EPDM bladder. (HX-2F model with butyl bladder).

**Reference standard**:

• Declaration of conformity to essential safety requirements specified in Directive 97/23/EC (PED). The 2 litre model is without CE marking.

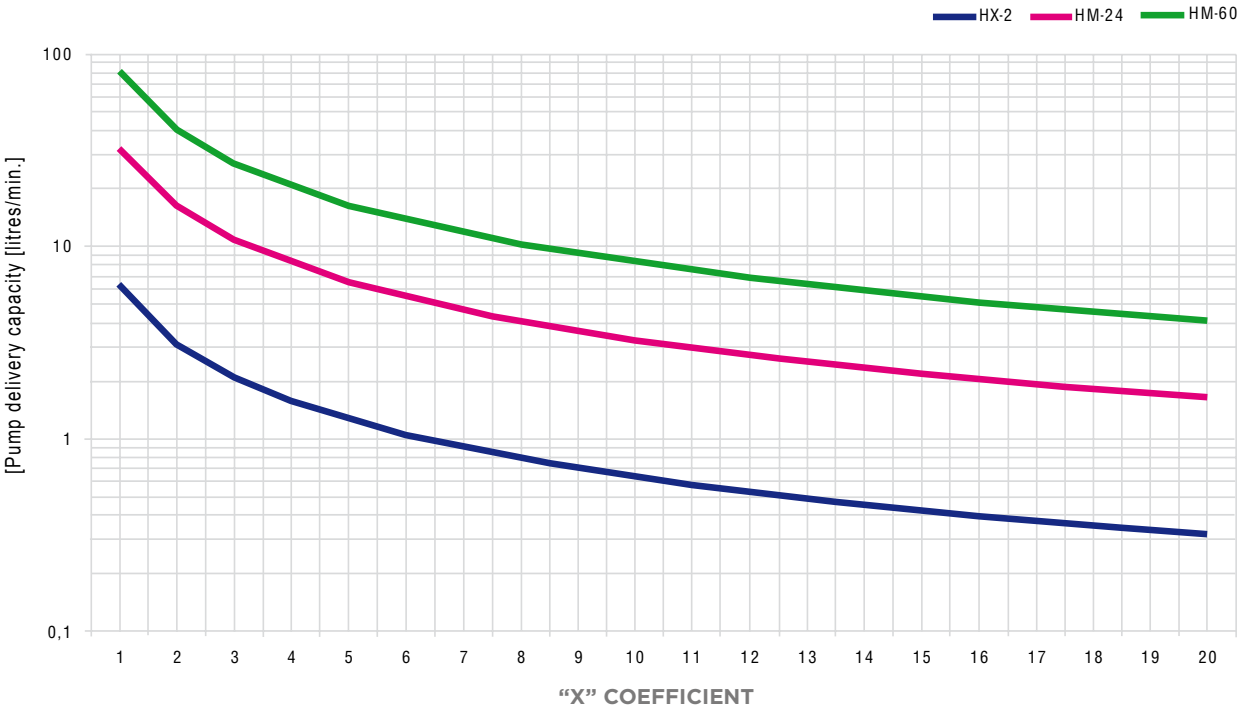
**WARRANTY: 2 YEARS**

## DIMENSIONS

| MODEL | CODE | LITRES | Ppre bar | Pmax bar | max | mm | mm | mm | DN1 | mm | NOTES |
|---|---|---|---|---|---|---|---|---|---|---|---|
| HX - 2 F * | A0A0L07 | 2 | 1,5 | 10 | +99°C | 130 | 230 | - | 3/4" | 150 x 150 x 240 | |
| HS 24 CE | A0C2L27 | 24 | 1,5 | 10 | +99°C | 360 | 420 | - | 1" | 360 x 360 x 380 | |
| HM 24 CE | A0A2L27 | 24 | 1,5 | 10 | +99°C | 270 | 475 | - | 1" | 280 x 280 x 470 | |
| HM 24 GPM CE | A0B2L27 | 24 | 1,5 | 10 | +99°C | 270 | 285 | 475 | 1" | 280 x 470 x 300 | |
| HM 60H CE | A0B2L35 | 60 | 1,5 | 10 | +99°C | 400 | 480 | 655 | 1" | 410 x 650 x 500 | |
| HM 60V CE | A0A2L35 | 60 | 1,5 | 10 | +99°C | 400 | 775 | - | 1" | 410 x 410 x 860 | |

* No CE marking

## Bladder accumulator selection chart



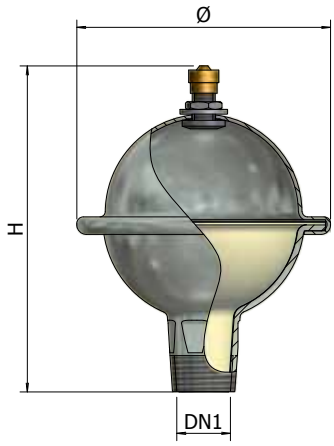

To make sizing easier, a chart has been drawn up to select the most appropriate accumulator according to both working pressureand delivery criteria. Note that the chart is based on the following hypothesis: standard precharge and 15 pump starts per hour (see p. 27 to identify the "X" coefficient).

# MICRON

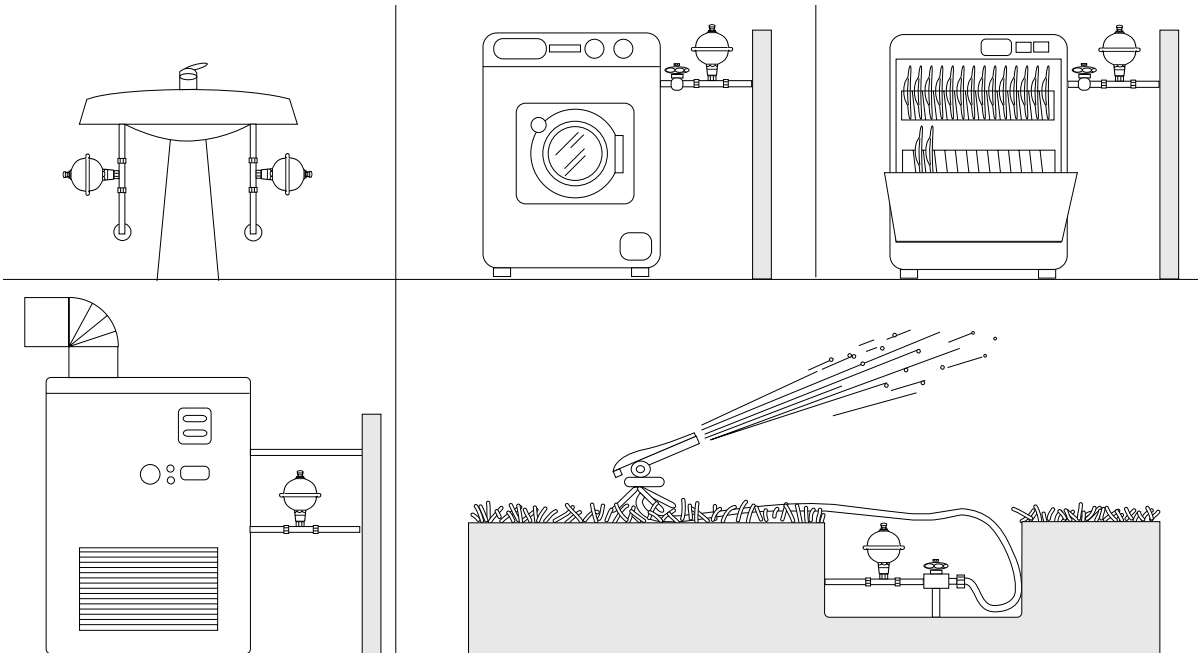
## WATER HAMMER ARRESTOR MINI-TANK

(160ML)

## MICRON




## EXAMPLES OF INSTALLATION



- Water hammer arrestor
- For drinking water
- For pressurisation systems

The Micron mini-tank is designed to absorb sudden overpressure caused by water hammer in pressurised hydraulic systems.
The use of a MICRON mini-tank eliminates noise and vibrations caused by these phenomena, thus increasing the life of the system.

**WARRANTY: 2 YEARS**

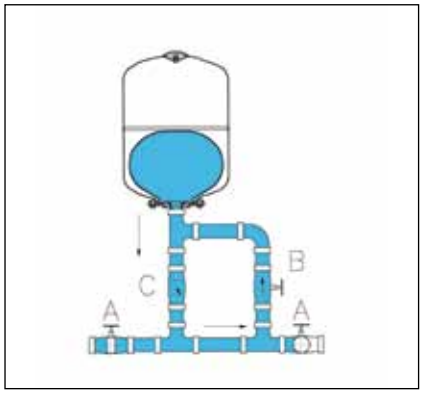
## DIMENSIONS

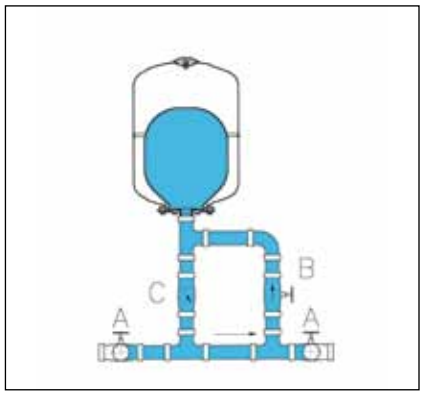
| MODEL | CODE | | Ppre | Pmax | | | | DN1 | | NOTES |
|---|---|---|---|---|---|---|---|---|---|---|
| | | LITRES | bar | bar | max | mm | mm | | mm | |
| MICRON | 12A0000 | 0,16 | 3,5 | 10 | +99°C | 88 | 121 | 1/2" | 270 x 270 x 180 | |

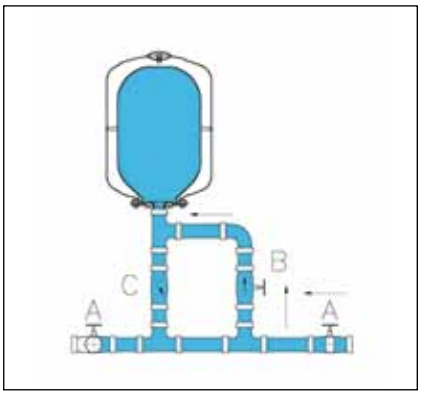
## WATER HAMMER ARRESTOR: TECHNICAL FEATURES

Water hammer (overpressure shock) is caused by the sudden closing of a valve or similar device in a hydraulic system. The sudden closure causes a sonic pressure wave to travel backward though the pipe system. As the pressure wave hits obstructions in the system, additional pressure waves arereflected back in the opposite direction. These pressure waves will cause loud noises within the system and can lead to physical damage and shortsystem life if left unchecked.To overcome this problem the system must be equipped with a hydraulic shock absorber able to absorb the pressure wave through the use of an aircushion. The Micron hammer arrestor is the perfect device for this purpose.

**Installation examples of pressure tanks used as shock hammer absorbers:**




**Constant pressure**
The "A" valves are open and the water rate of flowinside the pipeline is constant. During this phase,the vessel gradually fills up until the pressure beco-mes identical to the systems.

**Case No. 1**
Whenever the "A" valve upstream suddenly shuts down, thewater column inside the pipeline follows its course and, inorder to avoid a pressure drop at the valve outlet, i.e. a nar-rowing of the pipeline, the "C" check valve opens to releasepart of the stored water.

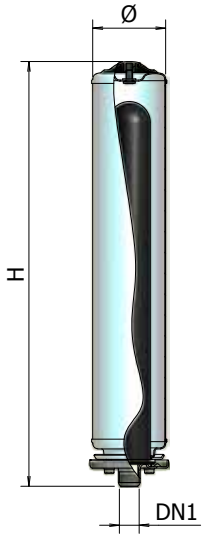
**Case No. 2**
Whenever the "A" valve downstream suddenly shuts down thewater column inside the pipeline preceding the valve creates apressure wave. This wave reverberates throughout the pipeline;in this case, water can only pass through the "B" narrowingvalve, which cushions the water hammer, gradually filling upthe vessel in the process.

# SANY

## REPLACEABLE BLADDER SANITARY TANKS, FOR SMALL SPACES

(0,5 - 6 LITRES)

**SANY**




For drinking water

For pressurisation systems

Water hammer arrestor

For sanitary hot water

**Characteristics:**

- Min./max. working temperature: -10° / +99°C;
- Long lasting epoxy powder paint, white;
- Replaceable bladder in butyl rubber;
- Plastc screen flange protection.

**Replaceable butyl bladder slim type tanks**

ELBI Slim type Tanks serve the double purpose of Shock Absorber and Domestic Hot Water storage vessel in wall hung and floor standing boilers.
The SANY product line has been designed by ELBI to respond to OEM's and contractors' demand for plumbing cushions that can be fitted in small and narrow spaces. The product design and appliance-finish paint render these vessels suitable for use in open/visible spaces of the house as well.

**WARRANTY: 2 YEARS**

## DIMENSIONS

| MODEL | CODE | | Ppre | Pmax | | | DN1 | | NOTES |
|---|---|---|---|---|---|---|---|---|---|
| | | LITRES | bar | bar | max | mm | mm | mm | |
| SANY-S 0,5 | A250L03 | 0,5 | 3 | 10 | +99°C | 90 | 170 | 3/4" GAS | |
| SANY-S 1 | A250L05 | 1 | 3 | 10 | +99°C | 90 | 240 | 3/4" GAS | |
| SANY-S 2 | A250L07 | 2 | 3 | 10 | +99°C | 90 | 380 | 3/4" GAS | |
| SANY-S 3 | A250L09 | 3 | 3 | 10 | +99°C | 90 | 530 | 3/4" GAS | |
| SANY-S 4 | A250L10 | 4 | 3 | 10 | +99°C | 90 | 670 | 3/4" GAS | |
| SANY-L 3 | A260L09 | 3 | 3 | 10 | +99°C | 120 | 300 | 1/2" GAS | |
| SANY-L 6 | A260L12 | 6 | 3 | 10 | +99°C | 120 | 500 | 1/2" GAS | |

## AUTOCLAVE EFFICIENCY (DRAW-DOWN)

Autoclave efficiency is the quantity of water that the bladder tank can supply within the maximum (p2) and minimum (p1) working pressure of the pump.

Called:
Va=total volume of the pressure tank
p1=switch (on) of the pump
p2=switch (off) of the pump
pc=air precharge pressure

NOTE: All pressure are referred to as gauge pressure.

The formula to calculate the efficiency of the tankis as follows:

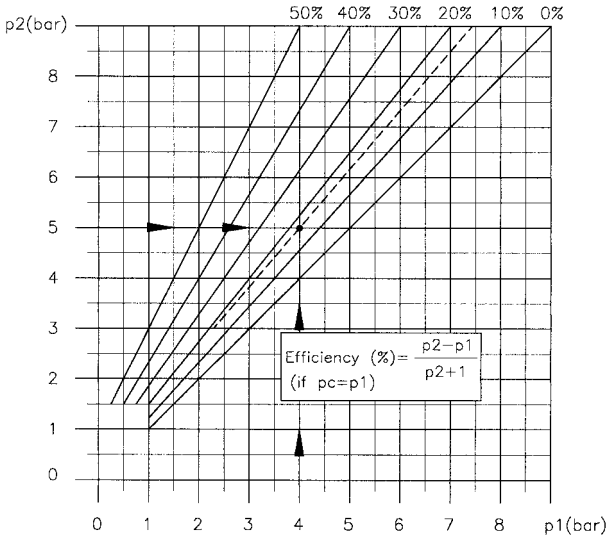
$$R = \frac{(p2 - p1) \times (pc + 1)}{(p2 + 1) \times (pc + 1)} \times Va; \quad \text{Stated } pc = p1$$

$$R = \frac{(p2 - p1)}{(p2 + 1)} \times Va$$

**Example:**
Va = 750 lt. p1 = 4 bar
p2 = 5 bar pc = p1 = 4 bar

The autoclave efficiency is: $R = \frac{(5 - 4)}{(5 + 1)} \times 750 = 125$ lt, equal to 16%.

The efficiency diagram (Fig. 1) shows the efficiency in % according to the min. and max. working pressures of the pump



**(Fig. 1)**

## How to size a bladder autoclave

**General formula to size a bladder autoclave:**

$$Vt = 16{,}5 \times \frac{Qmax}{A} \times \frac{Ps \times Pa}{Ps - Pa} \times \frac{1}{Pp}$$

| | |
|---|---|
| Vt= Accumulator global volume | [ litres ] |
| Qmax= Pump max. delivery capacity or system maximum consumption | [ lt/min. ] |
| A = Number of pump starts - stops per hour | (12 - 15) |
| Ps= Pump stop (absolute) pressure | [ bar ] |
| Pa= Pump starting (absolute) pressure | [ bar ] |
| Pp= (absolute) precharge pressure (Pa - 0.5) | [ bar ] |

**The pump may be sized according to two different techniques:**

**A. Sizing the accumulator by using the pump maximum delivery capacity**

Replace Qmax in the formula by the pump delivery capacity.

The Pa pump starting pressure must be higher than the Pp precharge pressure.

In order to optimise the accumulator yielding, the precharge pressure must be 0.5 bars lower than the pump starting pressure.

**B. Sizing the accumulator by using the maximum consumption of the system:**

In that case, define the maximum consumption of users by applying the calculation method in accordance with UNI 9182;

- Identify types of users (shower, WC, sink, etc.) equipped on the system;
- Assess the number of users for each type;
- Refer to table 1 for private buildings and to table 2 for public buildings, calculate the number of total system charge units (CU)

by multiplying each type of user by the corresponding CU listed in the table

**TAB.1** PRIVATE BUILDINGS

| UTILITIES | CU |
|---|---|
| Wash-basin | 1 |
| Bidet | 1 |
| Bath | 2 |
| Shower | 2 |
| Box toilet | 3 |
| Direct flush toilet | 6 |
| Kitchen sink | 2 |
| Washing machine | 2 |
| Dishwasher | 2 |
| Small hydrant 3/8" | 1 |
| Small hydrant 1/2" | 2 |
| Small hydrant 3/4" | 3 |
| Small hydrant | 6 |

**TAB.2** PUBLIC BUILDINGS

| UTILITIES | CU |
|---|---|
| Wash-basin | 2 |
| Bidet | 2 |
| Bath | 4 |
| Shower | 4 |
| Box toilet | 5 |
| Direct flush toilet | 10 |
| Kitchen washbasin | 4 |
| Sink | 3 |
| Foot bath | 2 |
| Fountain | 0,75 |
| Small hydrant 3/8" | 2 |
| Small hydrant 1/2" | 4 |
| Small hydrant 3/4" | 6 |
| Small hydrant | 10 |

Once the total charge units have been computed, turn them into litres per minute by referring to table 3.

TAB.3

CU CONVERSION TABLE (Litres/min.)

| CU | Q [lt/min] | CU | Q [lt/min] | CU | Q [lt/min] |
|---|---|---|---|---|---|
| 6 | 18 | 100 | 189 | 1250 | 930 |
| 8 | 24 | 120 | 219 | 1500 | 1050 |
| 10 | 30 | 140 | 234 | 1750 | 1128 |
| 12 | 36 | 160 | 255 | 2000 | 1230 |
| 14 | 40.8 | 180 | 276 | 2250 | 1320 |
| 16 | 46.8 | 200 | 297 | 2500 | 1410 |
| 18 | 51 | 225 | 321 | 2750 | 1470 |
| 20 | 55.8 | 250 | 345 | 3000 | 1560 |
| 25 | 67.8 | 275 | 366 | 3500 | 1680 |
| 30 | 78 | 300 | 387 | 4000 | 1830 |
| 35 | 87.6 | 400 | 468 | 4500 | 1950 |
| 40 | 97.2 | 500 | 540 | 5000 | 2070 |
| 50 | 114 | 600 | 600 | 6000 | 2280 |
| 60 | 132 | 700 | 660 | 7000 | 2460 |
| 70 | 144 | 800 | 714 | 8000 | 2640 |
| 80 | 159 | 900 | 774 | 9000 | 2820 |
| 90 | 174 | 1000 | 828 | 10000 | 3000 |

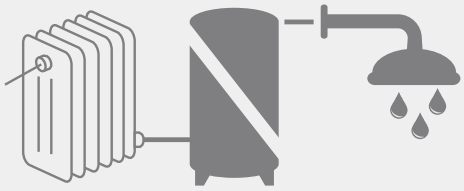
Once the system maximum consumption (Qmax) has been defined, proceed to size the accumulator by applying the cor-responding formula

TAB.4

"X" COEFFICIENT

| Pump stop pressure (bar) (max) | PUMP STARTING PRESSURE (bar) (min) | | | | | |
|---|---|---|---|---|---|---|
| | 0,5 | 1 | 1,5 | 2 | 2,5 | 3 |
| 1 | 1 | | | | | |
| 1,5 | 0,7 | 3 | | | | |
| 2 | 0,66 | 2 | 6 | | | |
| 2,5 | 0,62 | 1,66 | 3,75 | 10 | | |
| 3 | 0,6 | 1,5 | 3 | 6 | 15 | |
| 3,5 | 0,58 | 1,4 | 2,65 | 4,66 | 8,75 | 21 |
| 4 | 0,57 | 1,33 | 2,4 | 4 | 6,66 | 12 |
| 4,5 | 0,56 | 1,28 | 2,25 | 3,6 | 5,62 | 9 |
| 5 | 0,55 | 1,25 | 2,14 | 3,33 | 5 | 7,5 |
| 5,5 | 0,55 | 1,22 | 2,06 | 3,14 | 4,58 | 6,6 |
| 6 | 0,54 | 1,2 | 2 | 3 | 4,28 | 6 |
| 6,5 | 0,541 | 1,181 | 1,95 | 2,88 | 4,06 | 5,57 |
| 7 | 0,538 | 1,16 | 1,90 | 2,8 | 3,88 | 5,25 |
| 7,5 | 0,53 | 1,15 | 1,87 | 2,72 | 3,75 | 4,5 |
| 8 | 0,53 | 1,14 | 1,84 | 2,66 | 3,63 | 4,8 |

# MULTI-FUNCTIONAL TANKS
## (HEATING / SANITARY WATER)



## MULTI-FUNCTIONAL TANKS (HEATING / SANITARY WATER)

**32. AC-2 / D-CE:**
MULTI-FUNCTIONAL SANITARY TANKS WITH FIXED-BLADDER (2 – 500 LITRES)

**34. DL-CE:**
REPLACEABLE BLADDER MULTI-FUNCTIONAL TANKS (750 – 5.000 LITRES)

# MULTI-FUNCTIONAL TANKS

The multi-functional bladder vessels are designed to be fitted both into sanitary systems as expansion tanks (suitable to absorb the water expansion volume caused by a changing temperature), as well as pressure tanks for cold water sanitary systems.

The multi-functional tanks are CE certified as required by European Directive 97/23/EC (PED).

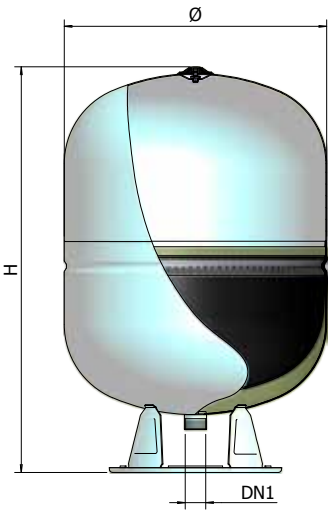
# AC-2 / D-CE

## MULTI-FUNCTIONAL SANITARY TANKS WITH FIXED BLADDER

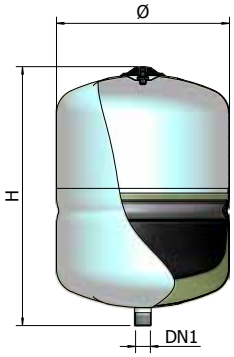
(2 - 500 LITRES)



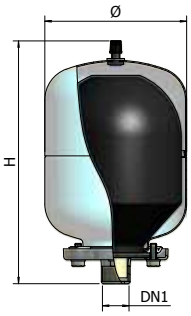
### DV 50-500




### D5 - 35




### AC - 2




CE certified product

For drinking water

For sanitary hot water

For heating systems

For air conditioning systems

For pressurisation systems

Water hammer arrestor

Top-Pro® internal protection (NO AC-2)

**Fixed bladder multifunctional tanks**

Multifunctional sanitary vessels with fixed bladder are designed to be fitted both into sanitary systems as expansion tanks, suitable to absorb the water expansion volume generated by a changing temperature, as well as pressure tanks for cold water sanitary systems.
Both applications are possible thanks to the exclusive Top-Pro® anti-corrosion treatment which ensures the protection against corrosion of the inner surface of the tank and the fitness of all parts in contact with water.
Installing a D series sanitary vessel considerably cuts down operating costs, while suppressing the discharge function of the safety valve.

In your Domestic Hot Water system install Elbi D-DV expansion tanks in the cold water supply pipe; do not install Elbi D-DV expansion tanks in the hot water draw-off pipe.

**Characteristics:**

• Min./max. working temperature: -10° / +99°C

• Equipped with a fixed alimentary bladder in butyl **(model AC-2 with replaceable bladder)** that ensures permanent separation of the air cushion from the water;

• Internal protection of the water connection in Nylon 66;

• Long lasting epoxy powder paint, white;

**Reference standard:**

• Declaration in compliance with the essential safety requirements of Directive 97/23/CE (PED).
(The 2 and 5 litre models are without CE marking).

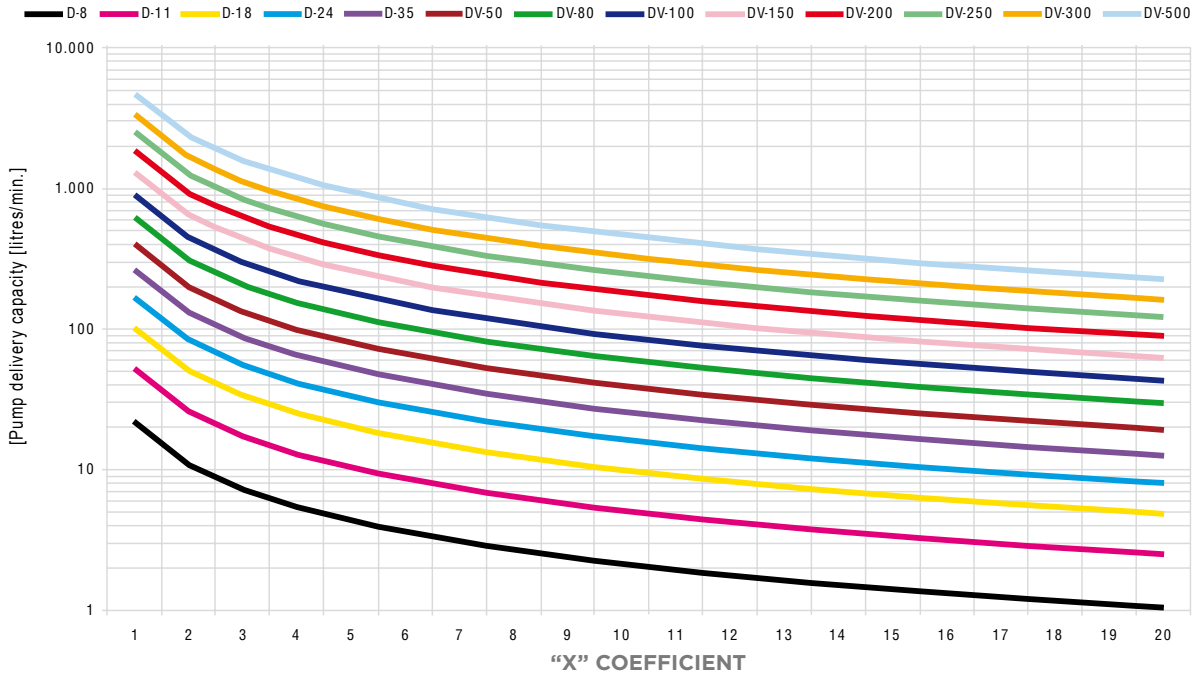
**WARRANTY: 3 YEARS**

## DIMENSIONS

| MODEL | CODE | LITRES | Ppre bar | Pmax bar | max | mm | mm | DN1 | mm | NOTES |
|---|---|---|---|---|---|---|---|---|---|---|
| AC-2 * | A012J07 | 2 | 1,5 | 8 | +99°C | 130 | 230 | 3/4" | 150 x 150 x 240 | |
| D 5 * | A202L11 | 5 | 3 | 10 | +99°C | 205 | 225 | 3/4" | 210 x 210 x 250 | |
| D 8 CE | A202L16 | 8 | 3 | 10 | +99°C | 205 | 300 | 3/4" | 210 x 210 x 320 | |
| D 11 CE | A202L19 | 11 | 3 | 10 | +99°C | 270 | 300 | 3/4" | 280 x 280 x 310 | |
| D 18 CE | A202L24 | 18 | 3 | 10 | +99°C | 270 | 410 | 3/4" | 280 x 280 x 450 | |
| D 24 CE | A202L27 | 24 | 3 | 10 | +99°C | 320 | 355 | 1" | 330 x 330 x 375 | |
| D 35 CE | A202L31 | 35 | 3 | 10 | +99°C | 400 | 390 | 1" | 410 x 410 x 410 | |
| DV 50 CE | A212L34 | 50 | 3 | 10 | +99°C | 400 | 585 | 1" | 410 x 410 x 610 | |
| DV 80 CE | A212L37 | 80 | 3 | 10 | +99°C | 400 | 820 | 1" | 410 x 410 x 860 | |
| DV 100 CE | A212L38 | 100 | 3 | 10 | +99°C | 500 | 775 | 1"1/4 | 510 x 510 x 830 | |
| DV 150 CE | A212L43 | 150 | 3 | 10 | +99°C | 500 | 1005 | 1"1/4 | 510 x 510 x 1040 | |
| DV 200 CE | A212L47 | 200 | 3 | 10 | +99°C | 600 | 1065 | 1"1/4 | 610 x 610 x 1110 | |
| DV 300 CE | A212L51 | 300 | 3 | 10 | +99°C | 650 | 1240 | 1"1/4 | 660 x 660 x 1290 | |
| DV 500 CE | A212L55 | 500 | 3 | 10 | +99°C | 775 | 1400 | 1"1/4 | 785 x 785 x 1440 | |

* Without CE marking

## Bladder accumulator selection chart




To make sizing easier, a chart has been drawn up to select the most appropriate accumulator according to both working pressureand delivery criteria. Note that the chart is based on the following hypothesis: standard precharge and 15 pump starts per hour (see p. 27 to identify the "X" coefficient).

| Pump max delivery capacity [litres/min.] | Δp System working pressure 1,5 - 3,0 | | | 2,0 - 3,5 | | | 2,5 - 4,0 | | |
|---|---|---|---|---|---|---|---|---|---|
| | Number of pump starts per hour | | | | | | | | |
| | 15 | 8 | 5 | 15 | 8 | 5 | 15 | 8 | 5 |
| 10 | D-35 | DV-50 | DV-50 | D-35 | DV-50 | DV-80 | D-35 | DV-50 | DV-80 |
| 20 | DV-50 | DV-80 | DV-100 | DV-80 | DV-100 | DV-150 | DV-80 | DV-100 | DV-150 |
| 25 | DV-80 | DV-100 | DV-150 | DV-80 | DV-150 | DV-150 | DV-100 | DV-150 | DV-200 |
| 40 | DV-100 | DV-200 | DV-200 | DV-150 | DV-200 | DV-300 | DV-150 | DV-200 | DV-300 |
| 45 | DV-150 | DV-200 | DV-300 | DV-150 | DV-200 | DV-300 | DV-150 | DV-300 | DV-300 |
| 55 | DV-150 | DV-300 | DV-300 | DV-200 | DV-300 | DV-500 | DV-200 | DV-300 | DV-500 |
| 75 | DV-200 | DV-300 | DV-500 | DV-300 | DV-500 | DV-500 | DV-300 | DV-500 | DV-500 |
| 95 | DV-300 | DV-500 | DV-500 | DV-300 | DV-500 | 2XDV-300 | DV-500 | DV-500 | 2XDV-500 |
| 115 | DV-300 | DV-500 | 2XDV-300 | DV-300 | 2XDV-300 | 2XDV-500 | DV-500 | 2XDV-300 | 2XDV-500 |

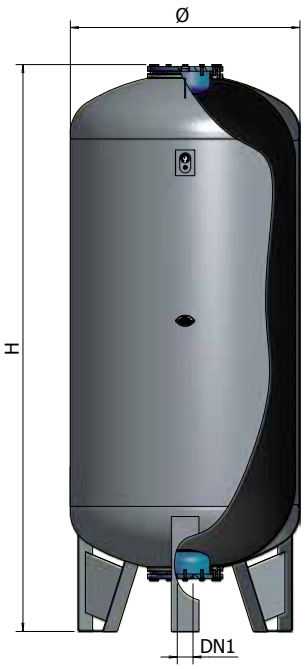
# DL-CE

## REPLACEABLE BLADDER MULTI-FUNCTIONAL TANKS

(750- 5000 LITRES)

**DL 750 - 2000**


**DL 3000 - 5000**




CE certified product

For drinking water

For sanitary hot water

For heating systems

For air conditioning systems

For pressurisation systems

Models from 750 to 2000 litres with upper tie rod.
The 3000 and 5000 litre models have an upper flange.

The DL series replaceable bladder tanks represent an effective alternative for installation in plants with high water contents which conventionally made us use traditional tanks without any bladders or install series of smaller tanks.
Installation of DL tanks allows therefore considerable cost savings for installation and maintenance.
The DL series is equipped with an exclusively designed bladder which work without mechanical stress even in high pressure conditions or an air cushion leak, thus ensuring an almost unlimited bladder life.

**Characteristics:**

- Working temperature: -10° / +99°C.
- Water and air completely separate.
- Water completely separate from metal parts of the tank.
- Counter-flange with Top-Pro treatment (750 - 1000 litres)
- Glasslined counter-flange (2000 - 5000 litres)

*The sizes of DL series bladders trace the inner volume of the tank, enabling the bladder to work without any lengthening and ensuring its almost unlimited duration.*

- Pre-charging pressure: 2.5 bar.

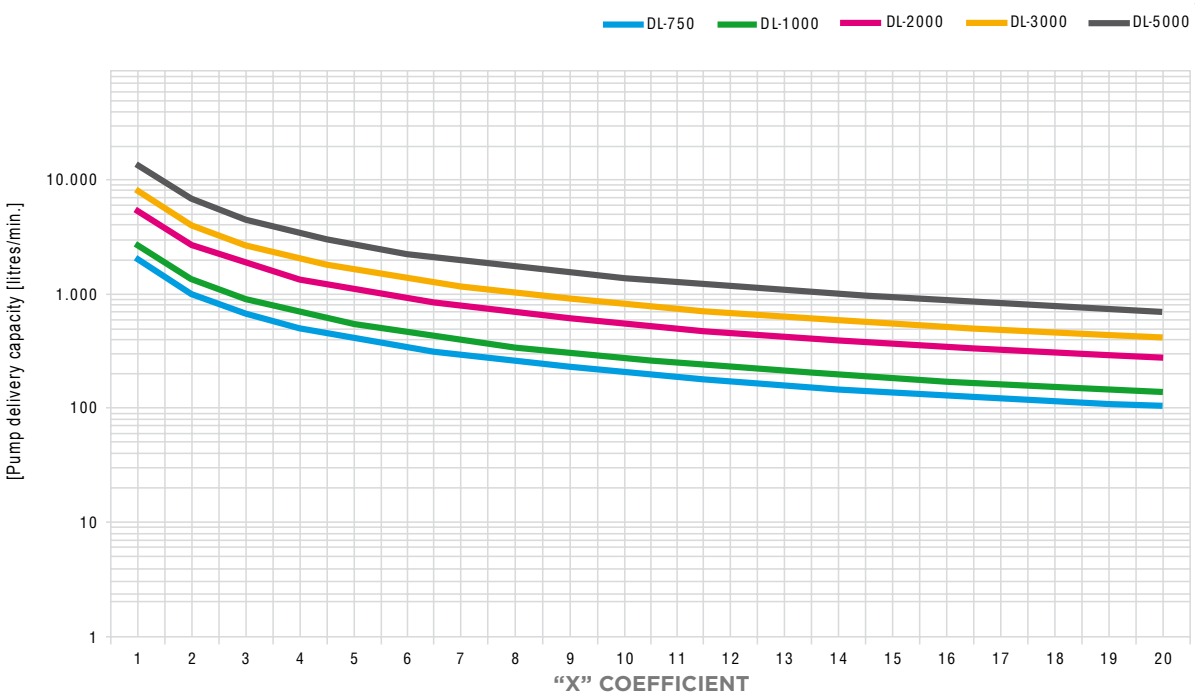
**Reference standard:**
- Declaration of conformity to essential safety requirements outlined by Directive 97/23/EC (PED).

**WARRANTY: 2 YEARS**

## DIMENSIONS

| MODEL | CODE | LITRES | Ppre bar | Pmax bar | max | mm | mm | DN1 mm | NOTES |
|---|---|---|---|---|---|---|---|---|---|
| DL 750/10 CE | A282L59 | 750 | 2,5 | 10 | +99°C | 800 | 1920 | G 2” | |
| DL 1000/10 CE | A282L62 | 1000 | 2,5 | 10 | +99°C | 800 | 2370 | G 2” | |
| DL 2000/10 CE | A282L70 | 2000 | 2,5 | 10 | +99°C | 1100 | 2690 | G 3” | |
| DL 3000/10 CE | A282L74 | 3000 | 2,5 | 10 | +99°C | 1250 | 3100 | G 3” | |
| DL 5000/10 CE | A282L80 | 5000 | 2,5 | 10 | +99°C | 1550 | 3315 | G 3” | |
| DL 750/16 CE | A282R59 | 750 | 2,5 | 16 | +99°C | 800 | 1920 | G 2” | |
| DL 1000/16 CE | A282R62 | 1000 | 2,5 | 16 | +99°C | 800 | 2370 | G 2” | |
| DL 2000/16 CE | A282R70 | 2000 | 2,5 | 16 | +99°C | 1100 | 2690 | G 3” | |
| DL 3000/16 CE | A282R74 | 3000 | 2,5 | 16 | +99°C | 1250 | 3100 | G 3” | |

## Bladder accumulator selection chart




To make sizing easier, a chart has been drawn up to select the most appropriate accumulator according to both working pressureand delivery criteria. Note that the chart is based on the following hypothesis: standard precharge and 15 pump starts per hour (see p. 27 to identify the “X” coefficient).

| Pump max delivery capacity [litres/min.] | Δp System working pressure 1,5 - 3,0 | | | 2,0 - 3,5 | | | 2,5 - 4,0 | | | 2,5 - 4,0 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Number of pump starts per hour | | | | | | | | | | | |
| | 15 | 8 | 5 | 15 | 8 | 5 | 15 | 8 | 5 | 15 | 8 | 5 |
| 75 | 200 | 300 | 500 | 250 | 500 | 750 | 300 | 750 | 1000 | 250 | 500 | 750 |
| 95 | 200 | 500 | 750 | 300 | 750 | 1000 | 500 | 1000 | 2x750 | 300 | 500 | 1000 |
| 115 | 250 | 500 | 750 | 500 | 750 | 1000 | 500 | 1000 | 2x750 | 300 | 750 | 1000 |
| 150 | 300 | 750 | 1000 | 500 | 1000 | 2x750 | 750 | 2x750 | 2000 | 500 | 1000 | 2x750 |
| 200 | 500 | 1000 | 2x750 | 750 | 2x750 | 2000 | 1000 | 2000 | 3000 | 750 | 2x750 | 2000 |
| 300 | 750 | 2x750 | 2000 | 1000 | 2000 | 3000 | 2x750 | 3000 | 2x2000 | 1000 | 2x750 | 3000 |
| 500 | 2x750 | 2000 | 3000 | 2000 | 3000 | 5000 | 3000 | 5000 | 5000÷3000 | 2x750 | 3000 | 2x2000 |
| 800 | 2000 | 3000 | 5000 | 3000 | 5000 | 4x2000 | 2x2000 | 5000÷3000 | 2x5000 | 2000 | 2x2000 | 5000÷2000 |
| 1000 | 2000 | 2000 | 2x3000 | 2x2000 | 2x3000 | 2x5000 | 5000 | 2x5000 | 3x5000 | 3000 | 5000 | 5000÷3000 |

# EXPANSION TANKS FOR HEATING

## EXPANSION TANKS FOR HEATING



# EXPANSION TANKS FOR HEATING

**EXPANSION TANKS ARE DEVICES DESIGNED TO ABSORB THE VOLUME CHANGE OF WATER OR SOME OTHER LIQUIDS, THUS ALLOWING THE CORRECT OPERATION OF A HEATING PLANT DURING ALL ITS OPERATING PHASES.**

Elbi produces closed expansion tanks composed of a tank in sheet steel and a bladder in synthetic material which separates the heating circuit from a chamber previously charged with air.
Expansion tanks with bladder are made of quality sheet steel in compliance with EN standards and welded according to strict qualitative standards; they are produced on automated lines, welded with procedures and certified weld materials, equipped with bladders in rubber suitable to resist up to 110°C; they are pre-charged with pressure of 0.5 – 1.0 – 1.5 - 2 – 2.5 – 3 bar according to the static height of the water column.
All models are subject to a hydraulic test with a pressure of 1.5 times higher than the design pressure.
Versions manufactured according to the most important European standards in force are available and are supplied with a Declaration of Conformity pursuant to the essential safety requirements outlined by Directive 97/23/EC (PED).

**ELBI BLADDERS**

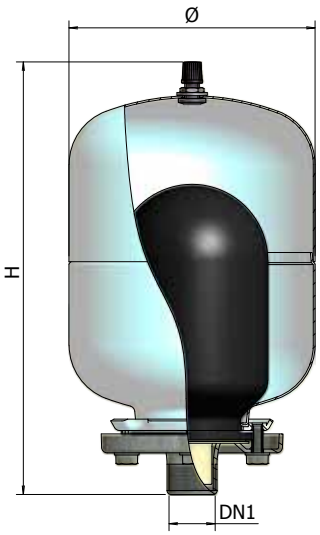
Designed by the Elbi technical office, bladders are tested by the quality control service once the manufacturing cycle is completed.

# AC-2 / ER-CE

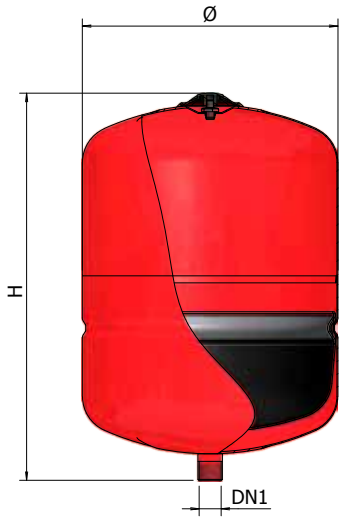
## FIXED BLADDER EXPANSION TANKS FOR HEATING

(2 - 24 LITRES)

## AC - 2




## ER 5 - 24




CE CE certified product

For non-drinking water

For heating systems

For air conditioning systems

**Characteristics:**

• Working temperature: -10° / +99°C

• Long lasting epoxy powder paint, red.
(Model AC-2: white)

• Fixed bladder in SBR rubber
**(Model AC-2: replaceable butyl bladder)**

• Wall fixing bracket on request (see page 225)

**Reference standard**

• Declaration of conformity to essential safety requirements outlined by Directive 97/23/EC (PED).
Models AC-2/ER5 are without CE marking.

**WARRANTY: 2 YEARS**

## DIMENSIONS

| MODEL | CODE | LITRES | Ppre bar | Pmax bar | max | mm | mm | DN1 | mm | NOTES |
|---|---|---|---|---|---|---|---|---|---|---|
| AC-2 * | A012J07 | 2 | 1,5 | 8 | +99°C | 130 | 230 | 3/4" | 150 x 150 x 240 | |
| ER 5 * | A102L11 | 5 | 1,5 | 8 | +99°C | 205 | 225 | 3/4" | 210 x 210 x 250 | |
| ER 8 CE | A102L16 | 8 | 1,5 | 8 | +99°C | 205 | 300 | 3/4" | 210 x 210 x 320 | |
| ER 12 CE | A102L20 | 12 | 1,5 | 8 | +99°C | 270 | 300 | 3/4" | 280 x 280 x 310 | |
| ER 18 CE | A102L24 | 18 | 1,5 | 8 | +99°C | 270 | 410 | 3/4" | 280 x 280 x 450 | |
| ER 24 CE | A102L27 | 24 | 1,5 | 8 | +99°C | 320 | 355 | 3/4" | 330 x 330 x 375 | |

* Without CE marking

## CHOICE OF THE EXPANSION TANK

The table simplifies the choice of the ELBI expansion tank to be installed in hot water systems. The selection of the tank can be effectuated starting from the system's total capacity or from the plant's power, taking into consideration an average content of 12 litres per 1000 Kcal/h of power and a plant's maximum working pressure of 3 bars

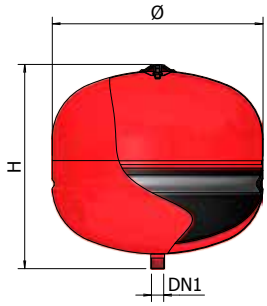
| MODEL | PRE-CHARGE PRESSURE [BAR] | PLANT HEIGHT [m] | TANK ACCEPTABLE VOLUME [litri] | TANK ABSORPTION CAPACITY [%] | Δ T = (90 - 14)°C Δ expansion coefficient 0.035 TOTAL WATER CONTENT IN THE PLANT [litres] | HEAT GENERATOR POWER kcal/h | kW |
|---|---|---|---|---|---|---|---|
| AC-2 | 0,5 | 5 | 1,3 | 62,5 | 36 | 3.000 | 3,49 |
| | 1 | 10 | 1 | 50 | 29 | 2.400 | 2,79 |
| ER 5 | 0,5 | 5 | 3,1 | 62 | 89 | 7.400 | 8,6 |
| | 1 | 10 | 2,5 | 50 | 71 | 5.900 | 6,86 |
| ER 8 CE | 0,5 | 5 | 5 | 62 | 143 | 11.900 | 13,84 |
| | 1 | 10 | 4 | 50 | 114 | 9.500 | 11,4 |
| ER 12 CE | 0,5 | 5 | 7,5 | 63 | 214 | 17.800 | 20,7 |
| | 1 | 10 | 6 | 50 | 171 | 14.250 | 16,57 |
| ER 18 CE | 0,5 | 5 | 11,3 | 63 | 323 | 26.900 | 31,3 |
| | 1 | 10 | 9 | 50 | 257 | 24.100 | 28,2 |
| | 1,5 | 15 | 6,7 | 37 | 191 | 15.900 | 118,5 |
| ER 24 CE | 0,5 | 5 | 15,5 | 65 | 443 | 36.900 | 43 |
| | 1 | 10 | 12 | 50 | 343 | 28.600 | 33,26 |
| | 1,5 | 15 | 9,3 | 39 | 266 | 22.200 | 25,82 |

# ERCE

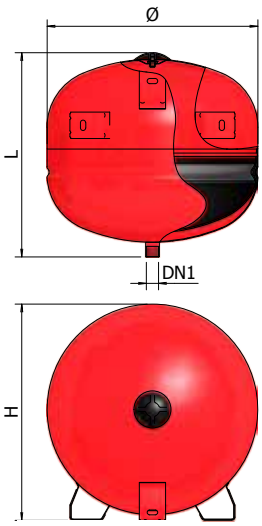
## FIXED BLADDER EXPANSION TANKS FOR HEATING

(35 - 500 LITRES)

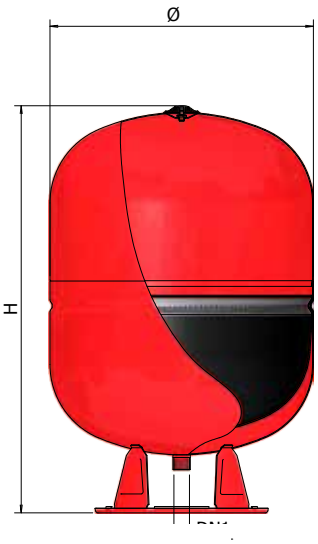
### ERCE 35 - 50




### ERCE 35/P - 50/P




### ERCE 80 - 500




CE certified product

For non-drinking water

For heating systems

For air conditioning systems

**Characteristics:**

• Working temperature: -10° / +99°C

• Long lasting epoxy powder paint, red.

• Fixed bladder in SBR rubber
**(Model AC-2: replaceable butyl bladder)**

• Wall fixing bracket on request (see page 239)

**Reference standard**

• Declaration of conformity to essential safety requirements outlined by Directive 97/23/EC (PED).

**WARRANTY: 2 YEARS**

## DIMENSIONS

| MODEL | CODE | | Ppre | Pmax | | | | | DN1 | | NOTES |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | LITRES | bar | bar | max | mm | mm | mm | | mm | |
| ERCE 35 | A102L31 | 35 | 1,5 | 10 | +99°C | 400 | 390 | - | 3/4" | 410 x 410 x 410 | |
| ERCE 35/P* | A122L31 | 35 | 1,5 | 10 | +99°C | 400 | 415 | 390 (LENGTH) | 3/4" | 410 x 410 x 410 | |
| ERCE 50 | A102L34 | 50 | 1,5 | 10 | +99°C | 400 | 500 | - | 3/4" | 410 x 410 x 535 | |
| ERCE 50/P* | A122L34 | 50 | 1,5 | 10 | +99°C | 400 | 415 | 390 (LENGTH) | 3/4" | 410 x 410 x 535 | |
| ERCE 80 | A112L37 | 80 | 1,5 | 10 | +99°C | 400 | 820 | - | 3/4" | 410 x 410 x 860 | |
| ERCE 100 | A112L38 | 100 | 1,5 | 10 | +99°C | 500 | 775 | - | 3/4" | 510 x 510 x 830 | |
| ERCE 150 | A112L43 | 150 | 1,5 | 10 | +99°C | 500 | 1005 | - | 3/4" | 510 x 510 x 1040 | |
| ERCE 200 | A112L47 | 200 | 1,5 | 10 | +99°C | 600 | 1065 | - | 1" | 610 x 610 x 1110 | |
| ERCE 250 | A112L49 | 250 | 1,5 | 10 | +99°C | 650 | 1160 | - | 1" | 660 x 660 x 1210 | |
| ERCE 300 | A112L51 | 300 | 1,5 | 10 | +99°C | 650 | 1240 | - | 1" | 660 x 660 x 1290 | |
| ERCE 500 | A112L55 | 500 | 1,5 | 10 | +99°C | 775 | 1400 | - | 1" | 785 x 785 x 1440 | |

1MPa = 10 bar 1MPa = 10 bar

*Version with feet for wall fixing

## CHOICE OF THE EXPANSION TANK

The table simplifies the choice of the ELBI expansion tank to be installed in hot water systems. The selection of the tank can be effectuated starting from the system's total capacity or from the plant's power, taking into consideration an average content of 12 litres per 1000 Kcal/h of power.

| MODEL | PRE-CHARGE PRESSURE | MAXIMUM WORKING PRESSURE OF SYSTEM | PLANT HEIGHT | TANK ACCEPTABLE VOLUME | TANK ABSORPTION CAPACITY | Δ T = (90 - 14)°C Δ expansion coefficient 0.035 TOTAL WATER CONTENT IN THE PLANT | HEAT GENERATOR POWER | |
|---|---|---|---|---|---|---|---|---|
| | [BAR] | [BAR] | [m] | [litres] | [%] | [litres] | kcal/h | kW |
| ER CE 35 | 1 | 3 | 10 | 17,6 | 50 | 503 | 41.900 | 48,72093 |
| | 1,5 | | 15 | 13,1 | 37 | 374 | 31.200 | 36,27907 |
| | 2 | | 20 | 8,8 | 25 | 251 | 20.900 | 24,30233 |
| ER CE 50 | 1 | 3 | 10 | 25 | 50 | 714 | 59.500 | 69,18605 |
| | 1,5 | | 15 | 18,8 | 38 | 537 | 71.400 | 52,03488 |
| | 2 | | 20 | 12,5 | 25 | 357 | 29.750 | 34,59302 |
| ER CE 80 | 1 | 3 | 5 | 40 | 50 | 1.143 | 95.250 | 110,7558 |
| | 1,5 | | 10 | 30 | 38 | 857 | 71.400 | 83,02326 |
| | 2 | | 20 | 20 | 25 | 571 | 47.600 | 55,34884 |
| ER CE 100 | 1 | 5 | 10 | 50 | 50 | 1.428 | 119.000 | 138,3721 |
| | 1,5 | | 15 | 38 | 38 | 1.086 | 90.500 | 105,2326 |
| | 2 | | 20 | 25 | 25 | 714 | 59.500 | 69,18605 |
| ER CE 150 | 0,5 | 5 | 5 | 100 | 67 | 2.857 | 238.000 | 276,7442 |
| | 1 | | 10 | 87 | 58 | 2.486 | 207.000 | 240,6977 |
| | 1,5 | | 15 | 75 | 50 | 2.143 | 178.600 | 207,6744 |
| ER CE 200 | 1 | 5 | 5 | 133 | 67 | 3.800 | 317.000 | 368,6047 |
| | 1,5 | | 15 | 116 | 58 | 3.314 | 276.000 | 320,9302 |
| | 2 | | 20 | 100 | 50 | 2.857 | 238.000 | 276,7442 |
| | 2,5 | | 25 | 83 | 42 | 2.371 | 197.600 | 229,7674 |
| | 3 | | 30 | 66 | 33 | 1.886 | 157.200 | 182,7907 |
| ER CE 250 | 1 | 5 | 5 | 178 | 71 | 5.086 | 423.800 | 492,7907 |
| | 1,5 | | 15 | 160 | 64 | 4.571 | 380.900 | 442,907 |
| | 2 | | 20 | 143 | 57 | 4.086 | 340.500 | 395,9302 |
| | 2,5 | | 25 | 125 | 50 | 3.571 | 297.600 | 346,0465 |
| | 3 | | 30 | 107 | 43 | 3.057 | 254.800 | 296,2791 |
| ER CE 300 | 1 | 6 | 5 | 214 | 71 | 6.114 | 509.500 | 592,4419 |
| | 1,5 | | 15 | 193 | 64 | 5.514 | 459.500 | 534,3023 |
| | 2 | | 20 | 171 | 57 | 4.886 | 407.000 | 473,2558 |
| | 2,5 | | 25 | 150 | 50 | 4.286 | 357.200 | 415,3488 |
| | 3 | | 30 | 128 | 43 | 3.657 | 304.800 | 354,4186 |
| ER CE 500 | 1,5 | 6 | 5 | 321 | 64 | 9.171 | 764.300 | 888,7209 |
| | 2 | | 15 | 285 | 57 | 8.143 | 678.600 | 789,0698 |
| | 2,5 | | 20 | 250 | 50 | 7.143 | 595.300 | 692,2093 |
| | 3 | | 25 | 215 | 43 | 6.143 | 512.000 | 595,3488 |
| | 3,5 | | 30 | 178 | 36 | 5.086 | 427.000 | 496,5116 |

# ERP

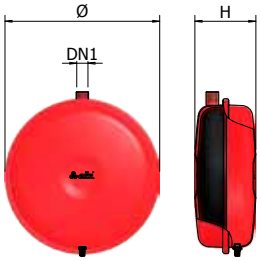
## FIXED-BLADDER FLAT EXPANSION TANKS, FOR BURNERS

(6 - 24 LITRES)

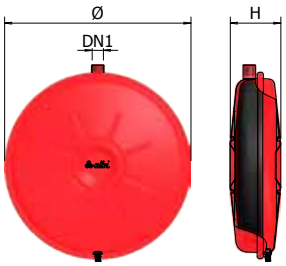
### ERP Q


ERP Q

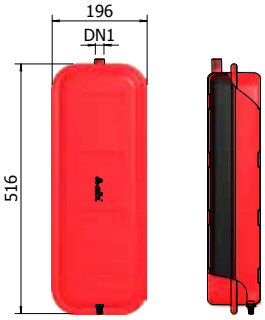
### ERP 320




### ERP 385




### ERP RET




For non-drinking water

For heating systems

**Characteristics:**

- Working temperature: -10° / +90°C.
- Long lasting epoxy powder paint, red.
- SBR rubber bladder with characteristics to guarantee the best performance and long duration.

**ERP 320 and ERP 385:**
**Articles supplyed in packs of 4 pieces.**

**WARRANTY: 2 YEARS**

## DIMENSIONS

| MODEL | CODE | LITRES | Ppre bar | Pmax bar | max | mm | mm | mm | DN1 | NOTES |
|---|---|---|---|---|---|---|---|---|---|---|
| ERP 320/6 | 1120106 | 6 | 1 | 3 | +90°C | 320 | 94 | - | 3/4" | |
| ERP 320/8 | 1120203 | 8 | 1 | 3 | +90°C | 320 | 121 | - | 3/4" | |
| ERP 320/10 | 1120301 | 10 | 1 | 3 | +90°C | 320 | 131 | - | 3/4" | |
| ERP 320/12 | 1120408 | 12 | 1 | 3 | +90°C | 320 | 165 | - | 3/4" | |
| ERP 385/7 | 1121101 | 7 | 1 | 3 | +90°C | 385 | 83 | - | 3/4" | |
| ERP 385/8 | 1121209 | 8 | 1 | 3 | +90°C | 385 | 98 | - | 3/4" | |
| ERP 385/10 | 1121306 | 10 | 1 | 3 | +90°C | 385 | 108 | - | 3/4" | |
| ERP 385/12 | 1121403 | 12 | 1 | 3 | +90°C | 385 | 139 | - | 3/4" | |
| ERP 385/14 | 1121501 | 14 | 1 | 3 | +90°C | 385 | 146 | - | 3/4" | |
| ERP 416/8 | 1135007 | 8 | 1 | 3 | +90°C | 416 | 75 | - | 3/8" | |
| ERP RET/6 | 1140601 | 6 | 1 | 3 | +90°C | - | - | 516 x 196 x 95 | 3/4" | |
| ERP RET/8 | 1140701 | 8 | 1 | 3 | +90°C | - | - | 516 x 196 x 110 | 3/4" | |
| ERP RET/10 | 1140901 | 10 | 1 | 3 | +90°C | - | - | 516 x 196 x 124 | 3/4" | |
| ERP RET/12 | 1141001 | 12 | 1 | 3 | +90°C | - | - | 516 x 196 x 152 | 3/4" | |
| ERP-Q/7 | 1150007 | 7 | 1 | 3 | +90°C | - | - | 436 x 344 x 77 | 3/8" | |
| ERP-Q/10 | 1150009 | 10 | 1 | 3 | +90°C | - | - | 436 x 344 x 97 | 1/2" | |
| ERP-Q/12 | 1150010 | 12 | 1 | 3 | +90°C | - | - | 436 x 344 x 117 | 1/2" | |
| ERP-Q/14 | 1150011 | 14 | 1 | 3 | +90°C | - | - | 436 x 344 x 132 | 1/2" | |
| ERP-Q/16 | 1150013 | 16 | 1 | 3 | +90°C | - | - | 436 x 344 x 147 | 1/2" | |
| ERP-Q/18 | 1150014 | 18 | 1 | 3 | +90°C | - | - | 436 x 344 x 155 | 1/2" | |
| ERP-Q/20 | 1150015 | 20 | 1 | 3 | +90°C | - | - | 436 x 344 x 162 | 1/2" | |
| ERP-Q/24 | 1150016 | 24 | 1 | 3 | +90°C | - | - | 436 x 344 x 177 | 1/2" | |

## CHOICE OF THE EXPANSION TANK

The table simplifies the choice of the ELBI expansion tank to be installed in hot water systems. The selection of the tank can be effectuated starting from the system's total capacity or from the plant's power, taking into consideration an average content of 8 litres per 1000 Kcal/h of power, a precharge pressure of 1 bar and a plant's maximum working pressure of 3 bars.

| MODEL | PRE-CHARGE PRESSURE [BAR] | PLANT HEIGHT [m] | TANK ACCEPTABLE VOLUME [litres] | TANK ABSORPTION CAPACITY [%] | Δ T = (90 - 14)°C Δ expansion coefficient 0.035 TOTAL WATER CONTENT IN THE PLANT [litres] | HEAT GENERATOR POWER kcal/h | kW |
|---|---|---|---|---|---|---|---|
| ERP 320/6 | 1,0 | 10 | 3,0 | 50 | 86 | 10.700 | 12,44 |
| ERP 320/8 | 1,0 | 10 | 4,0 | 50 | 114 | 14.300 | 16,63 |
| ERP 320/10 | 1,0 | 10 | 5,0 | 50 | 143 | 17.900 | 20,80 |
| ERP 320/12 | 1,0 | 10 | 6,0 | 50 | 172 | 21.500 | 25,00 |
| ERP 385/7 | 1,0 | 10 | 3,5 | 50 | 100 | 12.500 | 14,53 |
| ERP 385/8 | 1,0 | 10 | 4,0 | 50 | 114 | 14.300 | 16,63 |
| ERP 385/10 | 1,0 | 10 | 5,0 | 50 | 143 | 17.900 | 20,81 |
| ERP 385/12 | 1,0 | 10 | 6,0 | 50 | 172 | 21.500 | 25,00 |
| ERP 385/14 | 1,0 | 10 | 7,0 | 50 | 200 | 25.000 | 29,10 |
| ERP 416/8 | 1,0 | 10 | 4,0 | 50 | 114 | 14.300 | 16,63 |
| ERP RET 6 | 1,0 | 10 | 3,0 | 50 | 86 | 10.700 | 12,44 |
| ERP RET 8 | 1,0 | 10 | 4,0 | 50 | 114 | 14.300 | 16,63 |
| ERP RET 10 | 1,0 | 10 | 5,0 | 50 | 143 | 17.900 | 20,81 |
| ERP RET 12 | 1,0 | 10 | 6,0 | 50 | 172 | 21.500 | 25,00 |
| ERP Q 7 | 1,0 | 10 | 3,5 | 50 | 100 | 12.500 | 14,53 |
| ERP Q 10 | 1,0 | 10 | 5,0 | 50 | 143 | 17.900 | 20,81 |
| ERP Q 12 | 1,0 | 10 | 6,0 | 50 | 172 | 21.500 | 25,00 |
| ERP Q 14 | 1,0 | 10 | 7,0 | 50 | 200 | 25.000 | 29,10 |
| ERP Q 16 | 1,0 | 10 | 8,0 | 50 | 228 | 28.500 | 33,14 |
| ERP Q 18 | 1,0 | 10 | 9,0 | 50 | 258 | 32.200 | 37,44 |
| ERP Q 20 | 1,0 | 10 | 10,0 | 50 | 286 | 35.800 | 41,63 |
| ERP Q 24 | 1,0 | 10 | 12,0 | 50 | 343 | 42.900 | 49,88 |

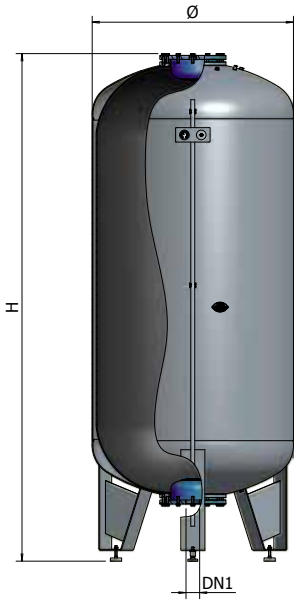
1MPa = 10 bar
Max press. 3 bar
t max 90°C
t min 10°C

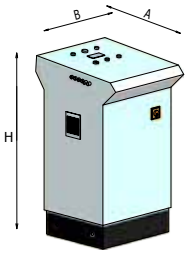
# ERL DAC - CE

## SELF-PRESSURISING EXPANSION TANKS FOR HEATING

(300 - 5000 LITRES)

### ERL - DAC - MCP




CE certified product

For heating systems

For non-drinking water

Self- pressurising model

**FUNCTION**

Traditional expansion tanks are used in heating plants in order to limit overpressures which are generated by the liquid's volume variation inside the closed circuit whenever temperature changes. In fact, the air cushion of the expansion tank serves as a "lung" according to a ratio established by Boyle law.
The DAC (Dynamic Air Cushion) system has been designed to solve in a simple, safe and economic way the problems that can occur to the heating plant designer in the following cases:
• Exceptionally high water volume in the plant;
• Limited dimension of the boiler room;
• Very reduced differences between the plant's min./max. pressures.

In these cases, the possibility to exploit completely the tank's volume as a water reserve allows to save considerably both in the installation costs and in the management and maintenance ones.
The groups of the ERL/DAC series allow to achieve this aim, since the expansion tank's sizing is not calculated according to the maximum value of water acceptance in the tank (Boyle law), but only according to the total expansion volume of the water contained in the plant.
The pressurisation level is constantly checked by the electronic control panel according to the min. and max. pressure set.

Standard version available at 10 bar

On request, models can be built with pressure higher than 10 bar and with certification in compliance with the most important international standards (TÜV, ASME, etc.).

**System components:**
The ERL/DAC system is composed of:
• ERL - D series expansion tank, CE certified
• Microprocessor (MCP) control unit, CE certified with built-in compressor

**Characteristics:**
• Working temperature: -10° / +99°C.

• EPDM rubber bladder (300 and 500 litre models),

• The 750 to 5000 litre models are equipped with a "full volume" type bladder whose dimensions ensure an almost unlimited duration of the membrane, enabling work with almost no mechanical stress.

• Epoxy powder paint, grey
(300 and 500 litre models),

• Solvent-based paint, grey
(750 to 5000 litres models).

• 750 to 2000 litre models: version with upper tie rod.

• The 3000 and 5000 litre models are equipped with an upper and lower flange opening.

**Reference standard**
• Declaration of conformity to essential safety requirements outlined by Directive 97/23/EC (PED).

**WARRANTY: 2 YEARS**

## DIMENSIONS

| MODEL | CODE | LITRES | Pmax bar | max | mm | mm | DN1 | NOTES |
|---|---|---|---|---|---|---|---|---|
| ERLCE 300 D | A152L51 | 300 | 10 | +99°C | 650 | 1310 | 1" 1/4 M | |
| ERLCE 500 D | A152L55 | 500 | 10 | +99°C | 775 | 1485 | 1" 1/4 M | |
| ERLCE 750 D | A152L59 | 750 | 10 | +99°C | 800 | 1920 | 2" M | |
| ERLCE 1000 D | A152L62 | 1000 | 10 | +99°C | 800 | 2370 | 2" M | |
| ERLCE 2000 D | A152L70 | 2000 | 10 | +99°C | 1100 | 2690 | G 3" | |
| ERLCE 3000 D | A152L74 | 3000 | 10 | +99°C | 1250 | 3170 | G 3" | |
| ERLCE 5000 D | A152L80 | 5000 | 10 | +99°C | 1550 | 3490 | G 3" | |

**MCP**
**CONTROL UNIT**

# CONTROL UNIT WITH MICROPROCESSOR

GARANZIA elbi 2 ANNI

CE

## DIMENSIONS

| MODEL | CODE | Volt (V) | Noise Decibel (dB) | Air (lt/min.) | Pmax (bar) | A (mm) | B (mm) | H (mm) | Power (HP/kW) | NOTES |
|---|---|---|---|---|---|---|---|---|---|---|
| MCP1 230/50/60 | 9000013 | 230 | 65 | 105 | 8 | 580 | 600 | 1080 | 1/0,75 | |
| MCP3 400/50/60 | 9000030 | 400 | 65 | 300 | 8 | 900 | 600 | 1110 | 2,5/1,8 | |
| MCP5 400/50/60 | 9000050 | 400 | 65 | 650 | 8 | 600 | 850 | 1110 | 5,5/4 | |
| MCP7 400/50/60 | 9000070 | 400 | 65 | 1050 | 8 | 550 | 900 | 1150 | 10/7,5 | |

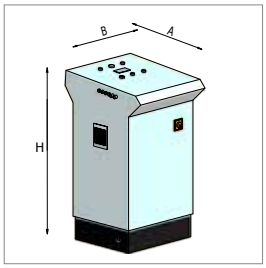
SELF-PRESSURIZED MODEL

MCP1


MCP5


MCP7


MCP3




• All the compressors are equipped with protection type IP- 54.
Maximum pressure of the compressor:
MCP1 = 8 bar; others = 10 bar.

• The compressors assembled on the MCP1 unit are mono-phase, all others are three-phase.

## "MCP" SELF-PRESSURISING CONTROL UNIT

The MCP unit is equipped with an analogue microprocessor and it is supplied with a compressor, liquid crystal display, solenoid valves and filters for the air inlet and outlet on the tank. The MC unit controls the system operation by keeping under control the set minimum and maximum pressure data, the compressor and the solenoid valves. There are four versions in order to satisfy the various types of electrical power supply and power of the compressors:

- **MCP1 - with 0.75 kW compressor, single-phase**
- **MCP3 - with 1.8 kW compressor, three-phase**
- **MCP5 – with 4 kW compressor, three-phase**
- **MCP7 - with 7.5 kW compressor, three-phase**

The MCP1 unit is available with single-phase power supply (110/220V 50/60 Hz); while the other models are endowed with a three-phase power supply at 380 V.

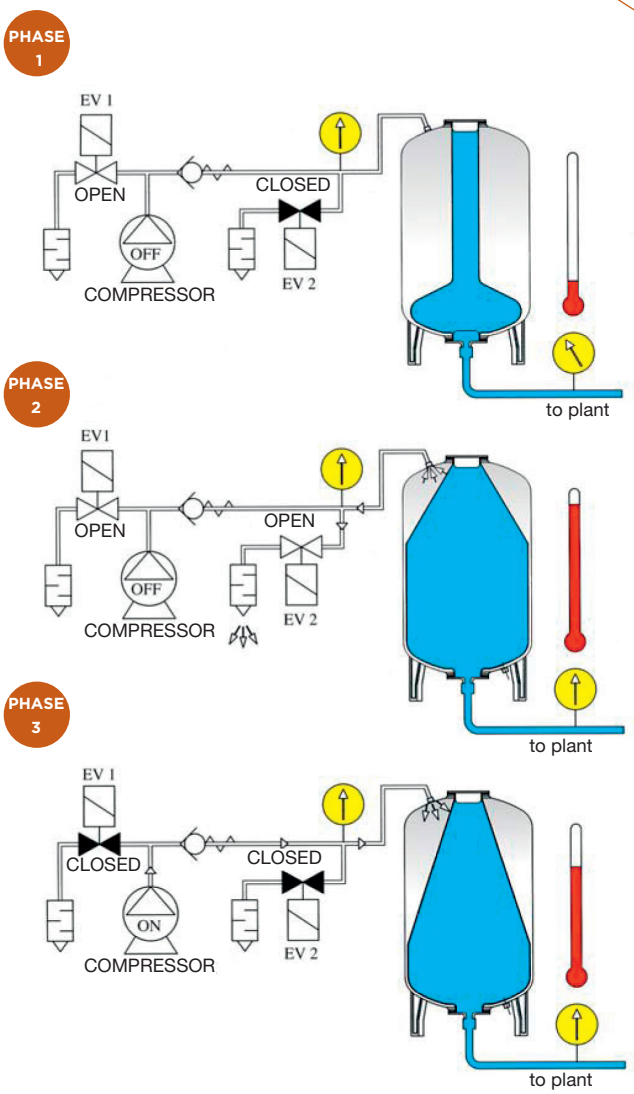
### Description of system operation

#### PHASE 1
When the system is off, therefore with the water at room temperature, the boiler is switched off, the compressor is in the OFF position so as the solenoid valves and EV-2, the plant is in the static phase as well as the pressure inside the expansion tank.

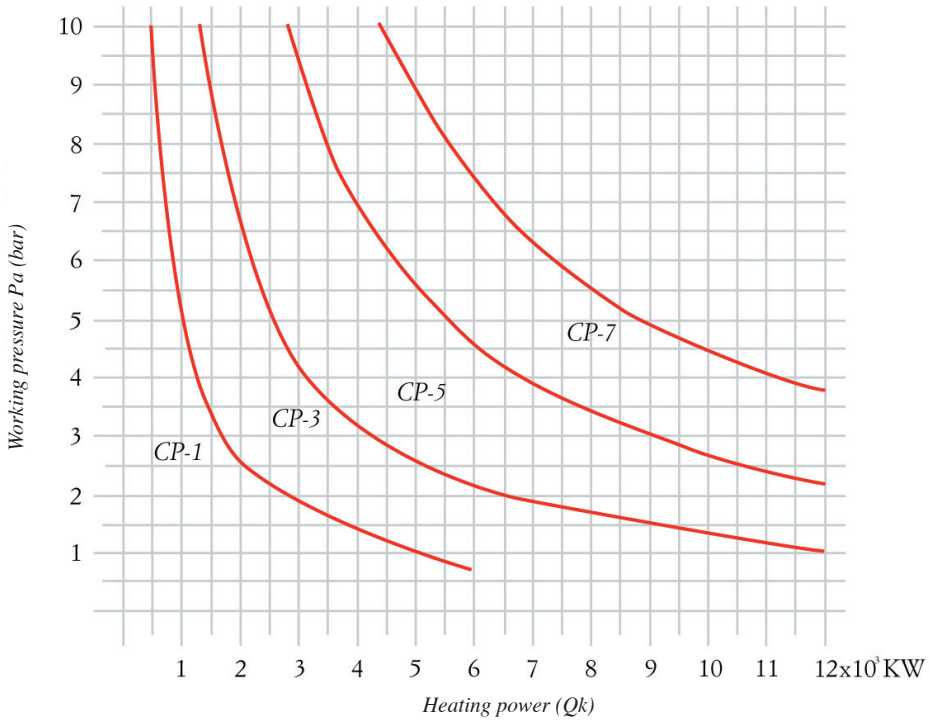
#### PHASE 2
The boiler becomes operative, the water volume inside the plant increases with the consequent pressure increase of the air cushion inside the expansion tank. When the maximum pressure reaches the set value, the EV-2 solenoid valve opens with the consequent air outlet through the SIL-1 silencer; the temperature reaches the designed maximum value and the boiler is switched off.

#### PHASE 3
The boiler is still off for the provided temperature difference, the plant slowly cools and therefore the water volume diminishes with the consequent pressure decrease of the air cushion inside the tank. When the pressure reaches the set minimum value, the compressor becomes operative by letting air in the tank until reaching the set maximum pressure. When the compressor is switched off, the solenoid valve opens by discharging the compressor's head (thus allowing a subsequent soft start without any efforts by the motor).

### COMPRESSORS – Technical Data
The "standard" assembeld compressors are supplied already in the unit, with preliminary controls. Four models with powers from 0.75 to 7.5 kW are provided in order to satisfy the most installation requirements. In the event it is necessary to use a compressor with a higher working pressure or with a higher suction index, which is not provided in traditional models, consult the company for getting a suitable model to the plant's requirements.
On request, some versions with tropicalised motor are available.




## DIAGRAM FOR SELECTING THE TYPE OF COMPRESSOR



**Tank sizing**

The sizing of the expansion tank is calculated only according to the total expansion volume of the water contained in the plant, increased by 20% in order to leave a margin of working and safety to the air cushion. The air cushion pressure is selected according to the static height (h), which corresponds to the difference expressed in meters between the highest point of the plant and the water inlet coupling in the expansion tank, plus a margin of 3 m for the deaeration.

**Example**

Plant's data

| | | | | |
|---|---|---|---|---|
| Boiler's power | Qk | = | 3200 | kW |
| Static height | h | = | 18 | m |
| Delivery maximum temperature | TM | = | 90 | °C |
| Water inlet temperature | Ti | = | 10 | °C |

If the water contents is 13L/KW, the water volume of the plant will be:
Vi = 3200 x 13 = 41600 L

From the table concerning the coefficients of the water expansion we will get:
Expansion % of the water at 90°C n = 3,59%
Expansion % of the water at 10°C n2 = 0,04%
(Tab. 2, page 51)
The Ke coefficient of expansion will be

$$Ke = \frac{3,59 - 0,04}{100} = 0,0355$$

Therefore the total water expansion will be:
Ve = 41600 x 0,0355 = 1477 litres
Therefore the optimal capacity of the tank for the system will be:
1.477+20% = 1.772 litres.

The model with a higher capacity, that is the ERL 2000 model, must be selected. As 1 bar corresponds to 10 meters of the water column and the static height is 18 m, the water column's height will be 21 m (taking into consideration 3 meters for the deaeration), to which corresponds a pressure of 2,1 bar. According to the pressure – heat power diagram (fig.1), the CP-1 single-phase compressor corresponds to the 2,1 bar pressure and to the 3200 kW heat power. The suitable supply and control unit is MCP3. Therefore, the system will be the following one: ERL-2000D coupled with a MCP3 unit.

**Choice of the compressor – Calculation of the flow index**

The total water volume in a heating plant is proportional to the generator's heat power. In a modern heating system, there are on average 13 litres of water per 1000 kcal/h.

(1) Vs = 13 L/1000 Kcal / h

• Calculation of the TS expansion time

(2) Ts = Vs x W x C x Dt
where Vs = 13 L / 1000 kcal / h
W = water volume at the designed maximum temperature kg/L
C = specific heat kcal/kg x °C
Dt = temperature increase °C

• Calculation of the VD water expansion volume relevant to the DT temperature increase:
(3) Vd = Vi x K
where Vi = water volume in the plant
K = coefficient of the water expansion according to the DT temperature increase

• Calculation of the If flow index:
(4) If = Ve / Ts
where If = flow index in L/min.

• Calculation of the actual suction index of the compressor (CFM):
(5) CFM = If x Kr
where Kr = 1,1 is a coefficient under the worst suction conditions, at the suction temperature of 30°C and relative humidity of 100%.

**Example for calculating the suction index**
(valid for most plants)

| | |
|---|---|
| plant's water volume | Vi = 28169 L |
| minimum temperature | Tm = 80 °C |
| maximum temperature | TM = 90 °C |
| temperature increase | Dt = 10 °C |
| water inlet temperature | Ti = 10 °C |
| specific heat | C = 1 kcal / kg x °C |
| water volume at 90° C | W = 0,965 kg/L (tab. 3, page 51) |

$$Ts = \frac{13 \times 0,965 \times 1 \times 10 \times 60}{1000} = 7,53 \text{ min}$$

Vd = Vi x K
from the table about the coefficients of expansion (tab. 2, page 51) we can get:
expansion % of the water at 90°C n = 3,59%
expansion % of the water at 80°C n1 = 2,90%

$$K = \frac{(n - n1)}{100}$$

$$K = \frac{(3,59 - 2,90)}{100} = 0,0069$$

Vd = 28169 x 0,0069 = 194,36 L

$$If = \frac{194,36}{7,53} = 25,81 \text{ L / min.}$$

CFM = 25,81 x 1,1 = 28,39 = 28,4 L/min.

total expansion in the system is: Ve = 28169 x Ke
total water expansion at 90°C n = 3,59%
total water expansion at 10°C n2 = 0,04%

$$Ke = \frac{(n - n2)}{100} = 25,81 \text{ L / min.}$$

$$Ke = \frac{(3,59 - 0,04)}{100} = 0,0355$$

Ve = 28169 x 0,0355 = 1000 L

Therefore, it is possible to affirm that in the most plants it is necessary to use a compressor with a suction index of CFM = 28,4 L/min. per 1000 L of expanded water at the atmospheric pressure. In order to size correctly the compressor, it is necessary to compare the suction index with the designed pressure of the expansion tank, taking into consideration that the result "Pressure multiplied by Volume" is a constant value when the pressure is absolute. Therefore, if the pressure in the expansion tank must be kept at 2,5 bar, remembering that the atmospheric pressure is about 1 bar, we will get:

$$CFM = \frac{1 + 2,5}{1} \times 28,4 = 99,4 \text{ L / min.}$$

In that case, it is necessary to select a compressor with a CFM suction index which is higher than 99.4 L/min.
As for heating plants with current parameters that vary from 11 to 14 litres per kW, use the diagram reported below for selecting the type of compressor.
For pressures which are higher than 10 bar, consult the company.

# SIZING OF A PRE-PRESSURISED EXPANSION TANK WITH BLADDER FOR HEATING SYSTEMS ("RACCOLTA_R", EDITION 2009)

The closed expansion tank volume must be sized in relation to the expansion volume of the water in the system.
The expansion volume (Ve) is the maximum variation of the water volume which can be in the system:

$$Ve = Va \cdot \frac{n}{100}$$

Where:
Va = total volume of the system [litres]
n = 0.31 + 3.9 · 10-3 · tm2
tm = maximum permitted temperature in °C referring to safety device activation

The nominal volume Vn of the closed expansion tank with a bladder is calculated using the following formula:

$$Vn \geq \frac{Ve}{1 - \frac{P1}{P2}}$$

Where:
P1 = absolute pressure in bar to which the gas cushion pre-charge; pressure which should not be lower than the hydro-static pressure of the point in which the chamber is installed (or the recovery pressure of the filling unit). This absolute initial pressure value cannot be lower than 1.5 bar.
P2 = absolute calibration pressure of the safety valve, in bar, decreased by a quantity corresponding to the drop in the existing height difference between the expansion tank and the safety valve, if the latter is placed lower or increased if placed higher.

TAB. 1

## SPECIFIC VOLUME OF THE WATER AT VARIOUS TEMPERATURES

| T °C | U litres/Kg | T °C | U litres/Kg | T °C | U litres/Kg | T °C | U litres/Kg |
|---|---|---|---|---|---|---|---|
| - 10 | 1,00186 | 16 | 1,00103 | 36 | 1,00632 | 80 | 1,0290 |
| - 5 | 1.00070 | 18 | 1,00138 | 38 | 1,00706 | 85 | 1,0324 |
| 0 | 1.00013 | 20 | 1,00177 | 40 | 1,0078 | 90 | 1,0359 |
| 2 | 1.00003 | 22 | 1,00221 | 45 | 1,0099 | 95 | 1,0396 |
| 4 | 1.00000 | 24 | 1,00268 | 50 | 1,0121 | 100 | 1,0434 |
| 6 | 1.00003 | 26 | 1,00320 | 55 | 1,0145 | 10 | 1,0515 |
| 8 | 1.00012 | 28 | 1,00375 | 60 | 1,0171 | 120 | 1,0600 |
| 10 | 1.00027 | 30 | 1,00435 | 65 | 1,0198 | 130 | 1,0795 |
| 12 | 1.00048 | 32 | 1,00497 | 70 | 1,0227 | 140 | 1,0795 |
| 14 | 1.00073 | 34 | 1,00563 | 75 | 1,0258 | 150 | 1,0903 |

TAB. 2A

| WORKING PRESSURE | WORKING PRESSURE (BAR) | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | 1 | 1,5 | 2 | 2,5 | 3 | 3,5 | 4 | 4,5 | 5 |
| 1,5 | 0,2 | | | | | | | | |
| 2 | 0,333 | 0,167 | | | | | | | |
| 2,5 | 0,429 | 0,286 | 0,143 | | | | | | |
| 3 | 0,5 | 0,375 | 0,25 | 0,125 | | | | | |
| 3,5 | 0,556 | 0,444 | 0,333 | 0,222 | 0,111 | | | | |
| 4 | 0,6 | 0,5 | 0,400 | 0,3 | 0,2 | 0,1 | | | |
| 4,5 | 0,636 | 0,545 | 0,455 | 0,364 | 0,273 | 0,182 | 0,091 | | |
| 5 | 0,667 | 0,583 | 0,5 | 0,417 | 0,333 | 0,25 | 0,167 | 0,083 | |
| 5,5 | 0,692 | 0,615 | 0,538 | 0,462 | 0,385 | 0,308 | 0,231 | 0,154 | 0,07 |
| 6 | 0,714 | 0,643 | 0,571 | 0,5 | 0,429 | 0,357 | 0,286 | 0,21 | 0,14 |
| 6,5 | 0,733 | 0,667 | 0,60 | 0,533 | 0,467 | 0,4 | 0,333 | 0,26 | 0,2 |
| 7 | 0,75 | 0,688 | 0,625 | 0,563 | 0,5 | 0,438 | 0,375 | 0,31 | 0,25 |
| 7,5 | 0,765 | 0,706 | 0,647 | 0,588 | 0,529 | 0,471 | 0,412 | 0,35 | 0,29 |
| 8 | 0,778 | 0,722 | 0,667 | 0,611 | 0,556 | 0,5 | 0,444 | 0,38 | 0,33 |
| 8,5 | 0,789 | 0,737 | 0,684 | 0,632 | 0,579 | 0,526 | 0,474 | 0,42 | 0,36 |
| 9 | 0,8 | 0,75 | 0,7 | 0,65 | 0,6 | 0,55 | 0,5 | 0,45 | 0,4 |
| 9,5 | 0,81 | 0,762 | 0,714 | 0,667 | 0,619 | 0,571 | 0,524 | 0,47 | 0,43 |
| 10 | 0,818 | 0,773 | 0,727 | 0,682 | 0,636 | 0,591 | 0,545 | 0,5 | 0,45 |

TAB. 2B

| WORKING PRESSURE | WORKING PRESSURE (BAR) | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | 5,5 | 6 | 6,5 | 7 | 7,5 | 8 | 8,5 | 9 | 9,5 |
| 6 | 0,07 | | | | | | | | |
| 6,5 | 0,13 | 0,06 | | | | | | | |
| 7 | 0,18 | 0,12 | 0,06 | | | | | | |
| 7,5 | 0,23 | 0,17 | 0,11 | 0,06 | | | | | |
| 8 | 0,28 | 0,22 | 0,16 | 0,11 | 0,06 | | | | |
| 8,5 | 0,31 | 0,26 | 0,21 | 0,16 | 0,1 | 0,05 | | | |
| 9 | 0,35 | 0,3 | 0,25 | 0,21 | 0,15 | 0,1 | 0,05 | | |
| 9,5 | 0,38 | 0,33 | 0,28 | 0,24 | 0,19 | 0,14 | 0,01 | 0,05 | |
| 10 | 0,41 | 0,36 | 0,32 | 0,27 | 0,23 | 0,18 | 0,14 | 0,09 | 0,09 |

## TABLES FOR THE TANK SELECTION

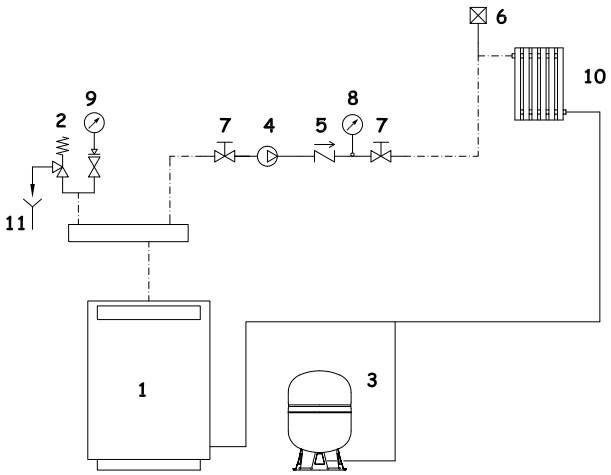
### TAB. 2 COEFFICIENTS OF THE WATER EXPANSION IN % (WITH OR WITHOUT THE ADDITION OF ANTI-FREEZE GLYCOL)

| T °C | WATER ONLY | ANTI-FREEZE 10% | ANTI-FREEZE 20% | ANTI-FREEZE 30% | ANTI-FREEZE 40% | ANTI-FREEZE 50% |
|---|---|---|---|---|---|---|
| 10 | 0,04 | 0,32 | 0,64 | 0,96 | 1,28 | 1,60 |
| 15 | 0,11 | 0,43 | 0,75 | 1,07 | 1,39 | 1,71 |
| 20 | 0,18 | 0,50 | 0,82 | 1,14 | 1,46 | 1,78 |
| 25 | 0,31 | 0,63 | 0,95 | 1,27 | 1,59 | 1,91 |
| 30 | 0,44 | 0,76 | 1,08 | 1,40 | 1,72 | 2,04 |
| 35 | 0,62 | 0,94 | 1,26 | 1,58 | 1,90 | 2,22 |
| 40 | 0,79 | 1,11 | 1,43 | 1,75 | 2,07 | 2,39 |
| 45 | 1,00 | 1,32 | 1,64 | 1,96 | 2,28 | 2,60 |
| 50 | 1,21 | 1,53 | 1,85 | 2,17 | 2,49 | 2,81 |
| 55 | 1,46 | 1,78 | 2,10 | 2,42 | 2,74 | 3,06 |
| 60 | 1,71 | 2,03 | 2,35 | 2,67 | 2,99 | 3,31 |
| 65 | 2,01 | 2,33 | 2,65 | 2,97 | 3,29 | 3,61 |
| 70 | 2,28 | 2,60 | 2,92 | 3,24 | 3,56 | 3,88 |
| 75 | 2,59 | 2,91 | 3,23 | 3,55 | 3,87 | 4,19 |
| 80 | 2,90 | 3,22 | 3,54 | 3,86 | 4,18 | 4,50 |
| 85 | 3,21 | 3,53 | 3,85 | 4,17 | 4,49 | 4,81 |
| 90 | 3,59 | 3,91 | 4,23 | 4,55 | 4,87 | 5,19 |
| 95 | 3,96 | 4,29 | 4,61 | 4,93 | 5,25 | 5,57 |
| 100 | 4,35 | 4,67 | 4,99 | 5,31 | 5,63 | 5,95 |

### TAB. 3 WATER VOLUME

| T °C | DENSITY KG/L. |
|---|---|
| 10 | 0,99975 |
| 15 | 0,99915 |
| 20 | 0,99820 |
| 25 | 0,99711 |
| 30 | 0,99576 |
| 35 | 0,99421 |
| 40 | 0,99224 |
| 45 | 0,99025 |
| 50 | 0,98807 |
| 55 | 0,98573 |
| 60 | 0,98324 |
| 65 | 0,98059 |
| 70 | 0,98781 |
| 75 | 0,97849 |
| 80 | 0,97183 |
| 85 | 0,96865 |
| 90 | 0,96534 |
| 95 | 0,96192 |
| 100 | 0,95838 |

## EXAMPLE OF INSTALLATION



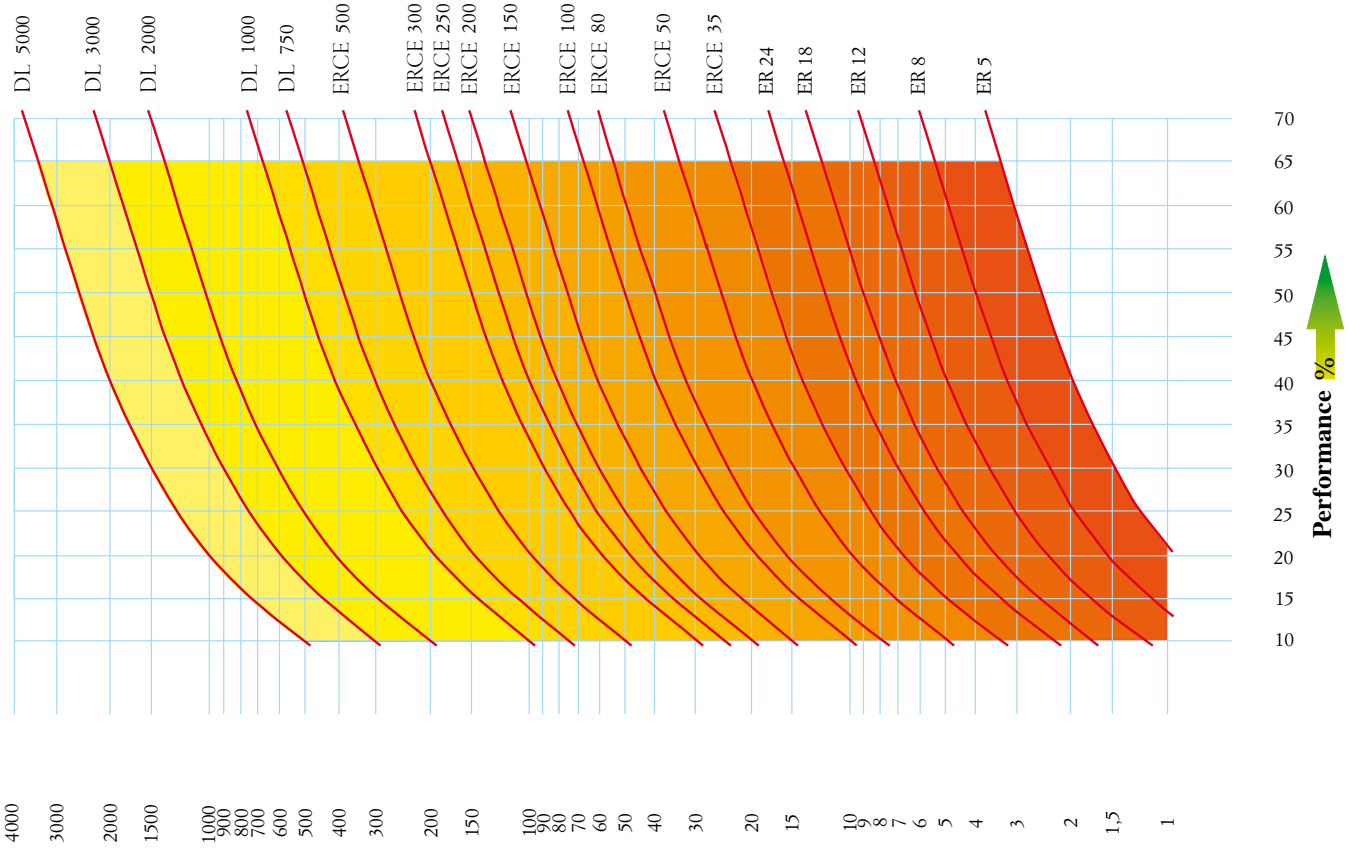

**KEYWORD**

1 - Heat generator
2 - Safety valve
3 - ERCE series expansion tank
4 - Boiler circuit pump
5 - Check valve
6 - Venting valve
7 - Shut-off valve
8 - Thermometer
9 - Gauge
10 - Radiator
11 - Drain

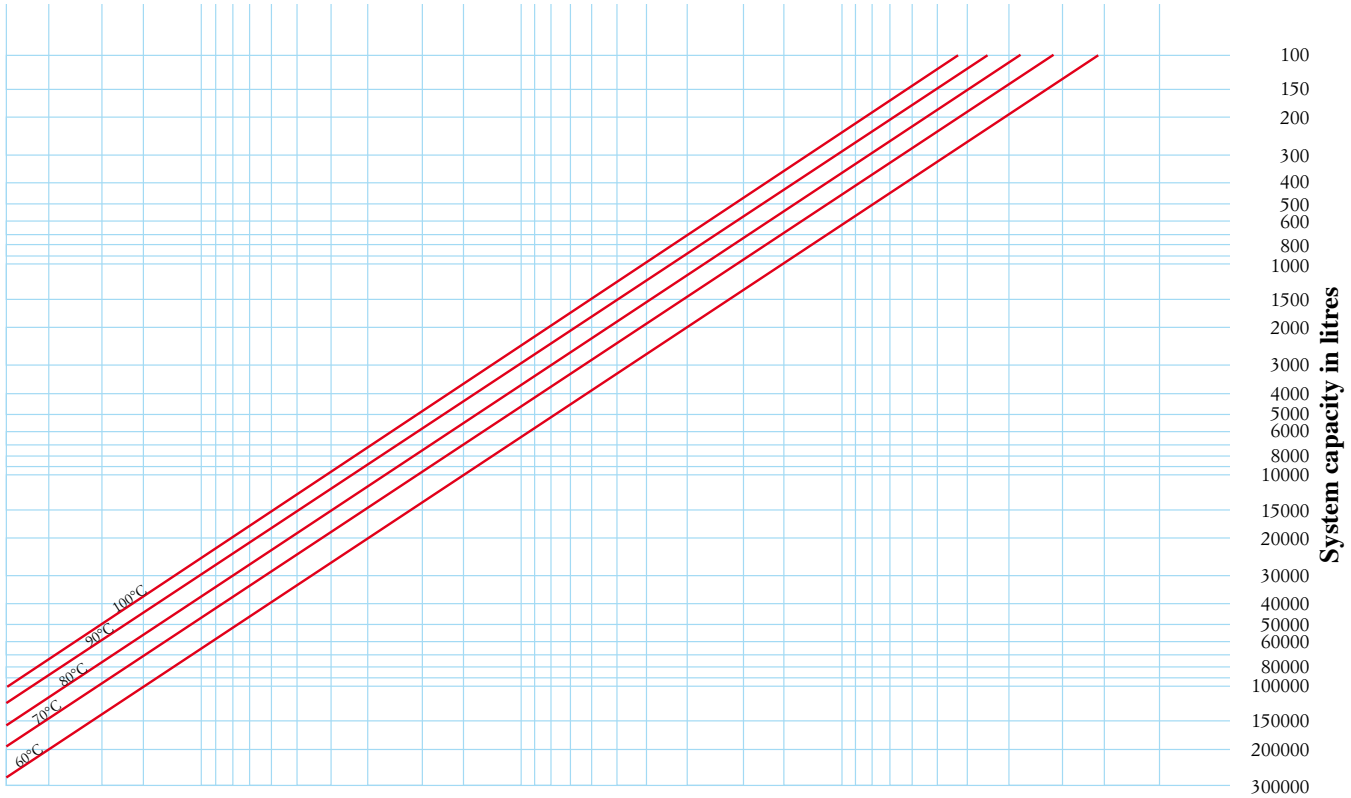
### TAB. 4 TYPE OF TANK ACCORDING TO THE PLANT'S WATER VOLUME (M3) AND THE MAX. WORKING TEMPERATURE (°C)

| DL | Volume m³ 70°C | Volume m³ 80°C | Volume m³ 90°C | Volume m³ 100°C | EXPANSION (litres) |
|---|---|---|---|---|---|
| 300 | 11 | 9 | 7 | 6 | 250 |
| 500 | 19 | 15 | 12 | 10 | 430 |
| 750 | 28 | 22 | 18 | 15 | 640 |
| 1000 | 38 | 30 | 24 | 20 | 850 |
| 2000 | 76 | 59 | 48 | 39 | 1.700 |
| 3000 | 114 | 89 | 72 | 59 | 2.550 |
| 5000 | 190 | 149 | 118 | 99 | 4.250 |

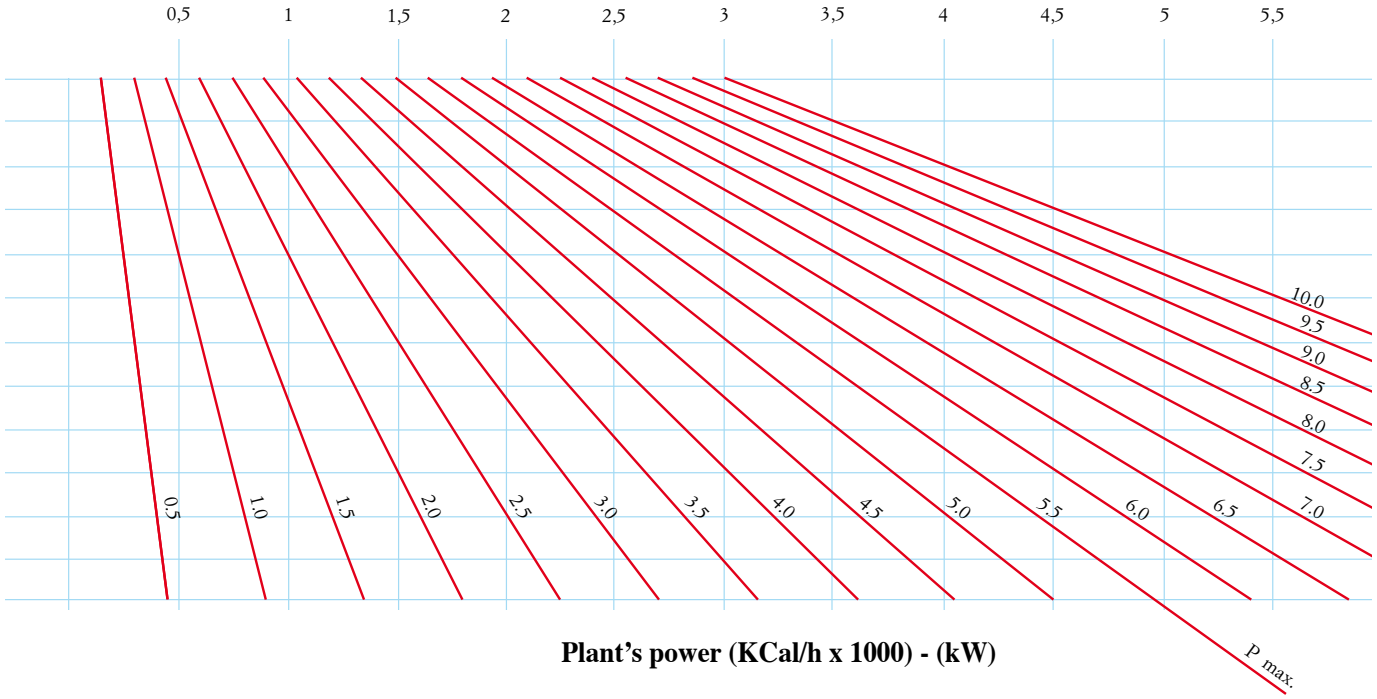
## ELBI expansion tanks




**Expansion volume in litres**

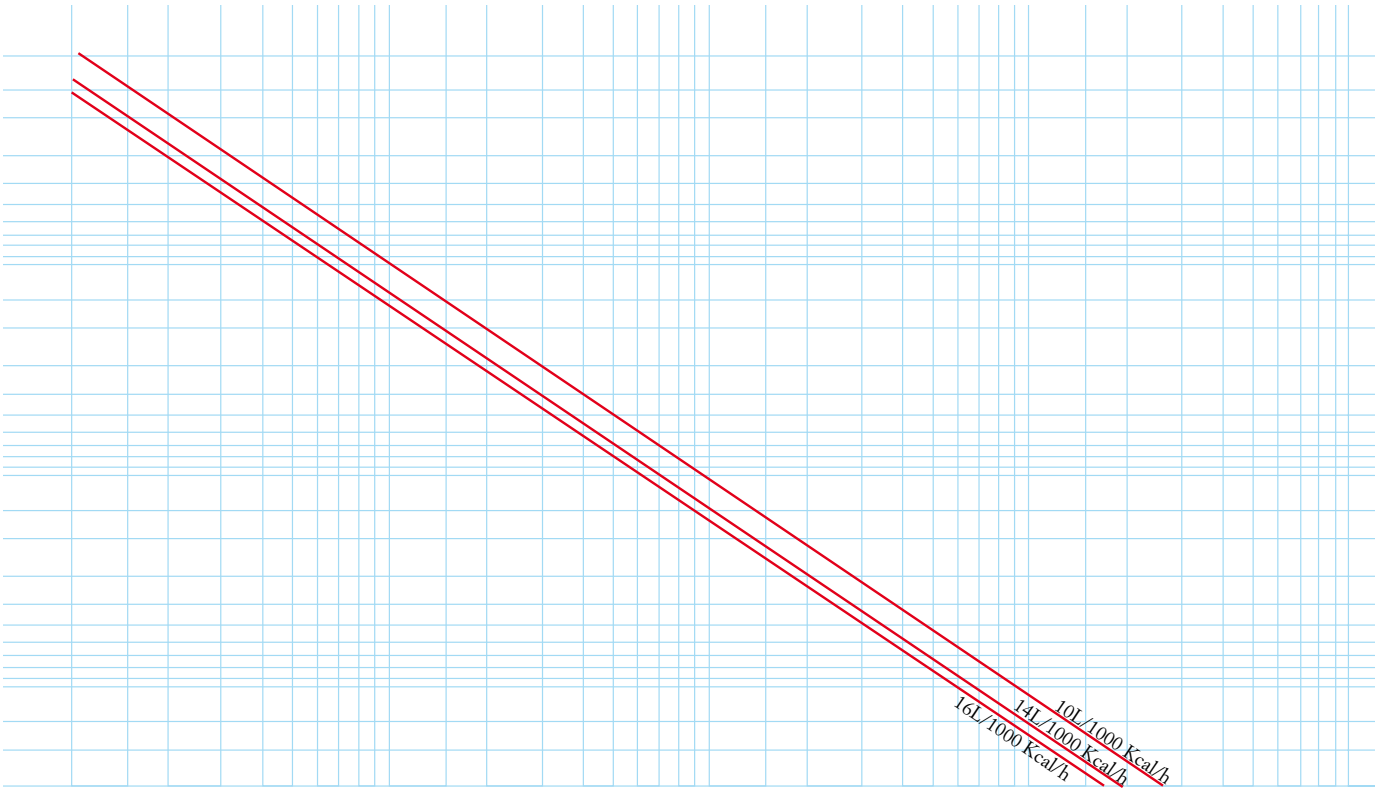


## Pre-charge pressure (bar)

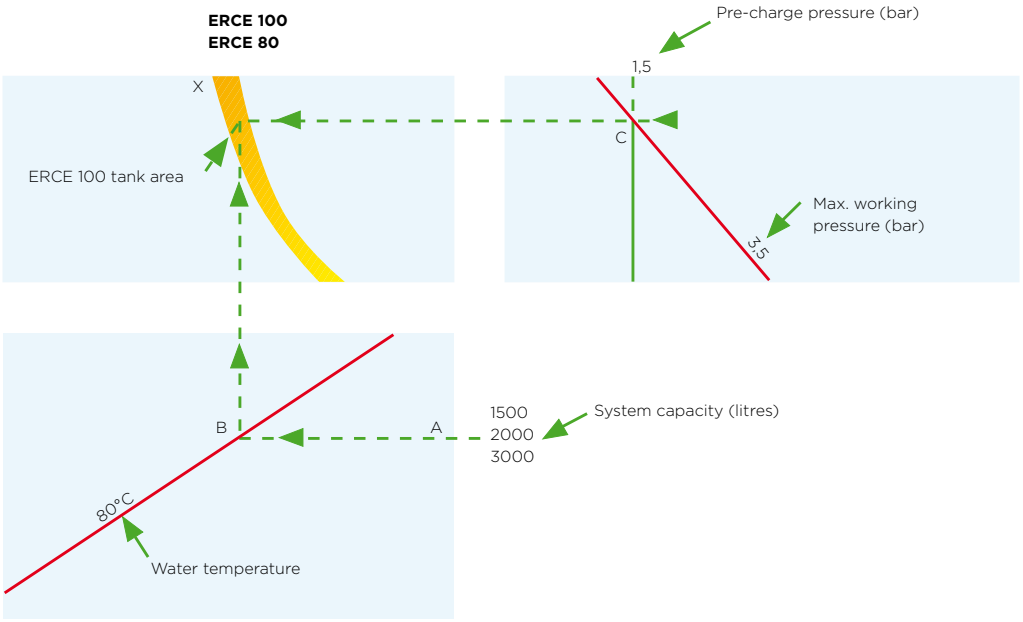



## Plant's power (KCal/h x 1000) - (kW)

| Kcal/h x 1000 | kW |
|---|---|
| 10 | 11,628 |
| 15 | 17,442 |
| 20 | 23,256 |
| 30 | 34,884 |
| 40 | 46,512 |
| 50 | 58,140 |
| 60 | 69,767 |
| 70 | 81,395 |
| 80 | 93,023 |
| 90 | 104,651 |
| 100 | 116,279 |
| 150 | 174,419 |
| 200 | 232,558 |
| 300 | 348,837 |
| 400 | 465,116 |
| 500 | 581,395 |
| 600 | 697,674 |
| 700 | 813,953 |
| 800 | 930,233 |
| 900 | 1046,512 |
| 1000 | 1162,791 |
| 1500 | 1744,186 |
| 2000 | 2325,581 |
| 3000 | 3488,372 |
| 4000 | 4651,163 |
| 5000 | 5813,953 |
| 6000 | 6976,744 |
| 7000 | 8139,535 |
| 8000 | 9302,326 |
| 9000 | 10465,116 |
| 10000 | 11627,907 |
| 15000 | 17441,860 |
| 20000 | 23255,814 |
| 30000 | 34883,721 |
| 40000 | 46511,628 |
| 50000 | 58139,535 |
| 60000 | 69767,442 |
| 70000 | 81395,349 |
| 80000 | 93023,256 |
| 90000 | 104651,163 |
| 100000 | 104651,163 |




16L/1000 kcal/h : plant with radiators
14L/1000 kcal/h : plant with convectors (or radiating panels with steel tubes)
10L/1000 kcal/h : plant with radiating panels with copper tubes

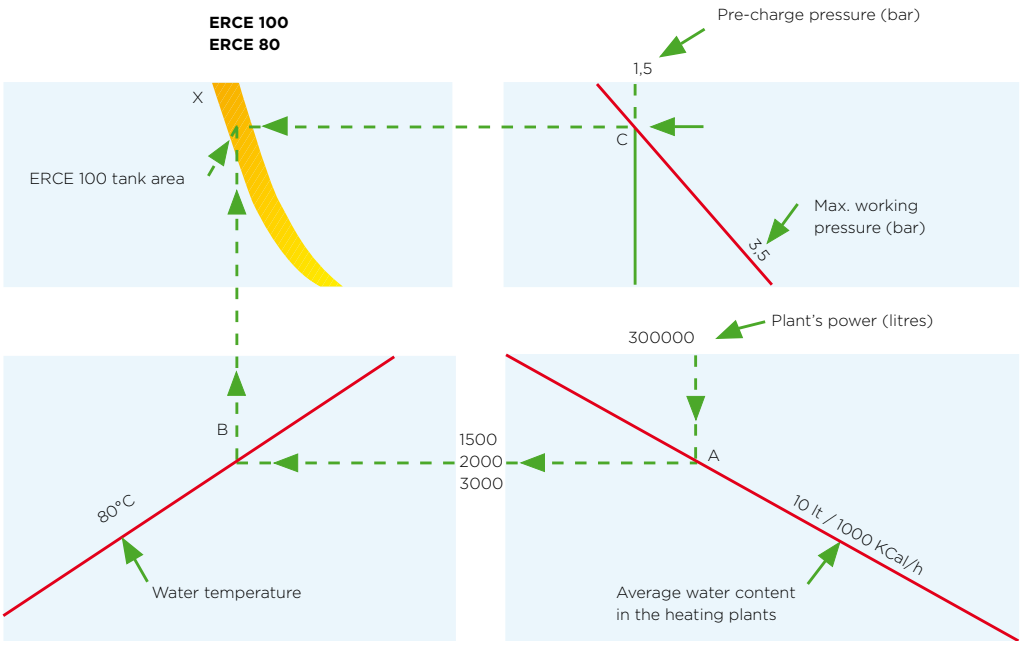



**Determination of the expansion tank according to the plant's water content**

The initial data used to determine the expansion tank's capacity are the following ones, namely:

- *plant's static pressure or precharge pressure (absolute pressure);*
- *maximum working pressure of the plant (absolute pressure);*
- *water mean temperature;*
- *plant's capacity.*

As you know already the plant's capacity, draw a horizontal line until intersecting the water mean temperature line "A-B". From the point "B", draw a vertical line up to the above graph. Since you know already the precharge pressure and the plant's maximum pressure, it is necessary to find the intersection point of the two right lines "C" and, starting from this one, draw a horizontal line until reaching the graph on the side. In the intersection point of these two right lines "X" you find the expansion tank necessary for the plant.



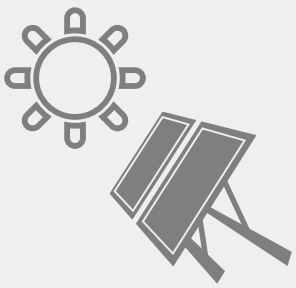

**Determination of the expansion tank according to the plant's power**

The initial data used to determine the expansion tank's capacity are the following ones, namely:

- *plant's static pressure or precharge pressure (absolute pressure);*
- *plant's static pressure or precharge pressure (absolute pressure);*
- *maximum working pressure of the plant (absolute pressure);*
- *water mean temperature;*
- *plant's power.*

Since you know already the power, draw a vertical line until intersecting the right line relevant to the mean water content of the plant "A". Starting from the point "A", draw a horizontal line until intersecting the water mean temperature line "AB". From the point "B", draw a vertical line up to the above graph. Since you know already the precharge pressure and the plant's maximum pressure, it is necessary to find the intersection point of the two right lines "C" and, starting from this one, draw a horizontal line until reaching the graph on the side. In the intersection point of these two right lines "X" you find the expansion tank necessary for the plant.

# TANKS FOR SOLAR SYSTEMS



## TANKS FOR SOLAR SYSTEMS



# TANKS FOR SOLAR SYSTEMS

**THE TANKS FOR SOLAR SYSTEMS ARE DEVICES DESIGNED TO PROTECT SOLAR SYSTEM PANELS FROM CIRCUIT OVERHEATING.**

---

**PROTECTION FROM OVERHEATING IN SOLAR PANEL SYSTEMS**

The systems with solar thermal panels connected to the heat exchanger in the cylinders, when the desired storage temperature of the hot water is reached, stops the fluid circulator on the solar circuit.

In this situation the temperature inside the solar circuit increases up to reaching the condition of **STAGNATION;** in this condition the thermal energy that the panel receives from the sun is the same as that dispersed by the panel in the environment: there can be no further temperature increase inside the system.

This situation brings the circuit to very high temperatures, which can even reach 150 °C causing boiling and evaporation of the anti-freeze liquid.

With these high temperatures the anti-freeze fluid contained in the system undergoes alterations which make them very aggressive/corrosive and which can compromise the anti-freeze characteristics.

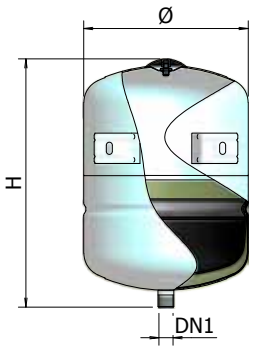
To reduce dilation of the fluid and steam which can form inside the solar circuit, expansion tanks must be installed suitable for solar systems.

# DS-CE

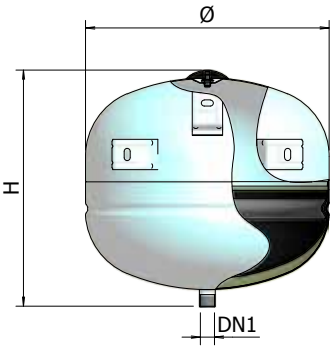
## FIXED BLADDER EXPANSION TANKS FOR SOLAR SYSTEMS

(8 - 300 LITRI)

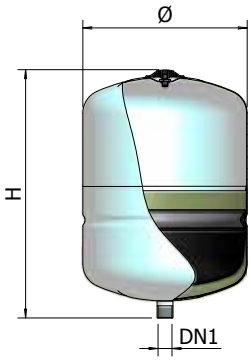
**DS 18/P-24/P**



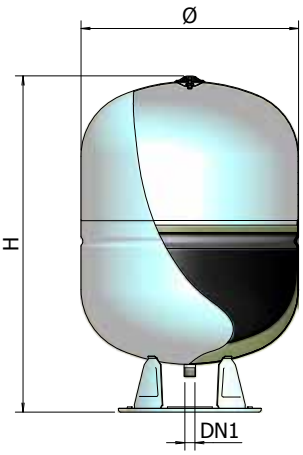

**DS 35/P**




**DS 8/35**




**DSV 50/300**




- CE certified product
- For heating systems
- For air conditioning systems
- For pressurisation systems
- Water hammer arrestor
- Inner protection TOP-PRO®
- For solar systems
- For non-drinking water

The expansion tanks of the DS series can be used both in heating systems and solar systems thanks to their internal, anti-corrosive TOP-PRO® treatment.

**WARRANTY: 2 YEARS**

**Characteristics:**

- Lower shell (water side) with internal, anti-corrosive TOP-PRO® treatment.
- Water inlet attachment turned downwards.
- Long-lasting epoxy powder paint, white.
- SBR rubber bladder.
- Min./max. operating temperature: -10°/ +110°C, with a peak temperature: +130°C (max. 2 hours).
- Pre-charge pressure: 3 bar.

**Reference standard:**

- Declaration of conformity to essential safety requirements specified in Directive 97/23/EC (PED).

## DIMENSIONS

| MODEL | CODE | LITRES | Ppre bar | Pmax bar | max | mm | mm | DN1 | mm | NOTES |
|---|---|---|---|---|---|---|---|---|---|---|
| DS-8 CE | A222L16 | 8 | 3 | 8 | 110°C | 205 | 300 | 3/4" | 210 x 210 x 320 | |
| DS-18 CE | A222L24 | 18 | 3 | 8 | 110°C | 270 | 410 | 3/4" | 280 x 280 x 310 | |
| DS 18/p CE* | A232L24 | 18 | 3 | 8 | 110°C | 270 | 410 | 3/4" | 280 x 280 x 310 | |
| DS-24 CE | A222L27 | 24 | 3 | 8 | 110°C | 320 | 355 | 3/4" | 330 x 330 x 375 | |
| DS 24/p CE* | A232L27 | 24 | 3 | 8 | 110°C | 320 | 355 | 3/4" | 330 x 330 x 375 | |
| DS-35 CE | A222L31 | 35 | 3 | 10 | 110°C | 400 | 390 | 3/4" | 410 x 410 x 410 | |
| DS 35/p CE* | A232L31 | 35 | 3 | 10 | 110°C | 400 | 390 | 3/4" | 410 x 410 x 410 | |
| DSV-50 CE | A242L34 | 50 | 3 | 10 | 110°C | 400 | 585 | 3/4" | 410 x 410 x 535 | |
| DSV-80 CE | A242L37 | 80 | 3 | 10 | 110°C | 400 | 820 | 3/4" | 410 x 410 x 860 | |
| DSV-100 CE | A242L38 | 100 | 3 | 10 | 110°C | 500 | 775 | 3/4" | 510 x 510 x 830 | |
| DSV-150 CE | A242L43 | 150 | 3 | 10 | 110°C | 500 | 1005 | 3/4" | 510 x 510 x 1040 | |
| DSV-200 CE | A242L47 | 200 | 3 | 10 | 110°C | 600 | 1065 | 1" | 610 x 610 x 1110 | |
| DSV-300 CE | A242L51 | 300 | 3 | 10 | 110°C | 650 | 1240 | 1" | 660 x 660 x 1290 | |

*Version with wall fastening feet

## HOW TO SELECT THE RIGHT EXPANSION TANK FOR SOLAR SYSTEMS

**The expansion tank for solar systems must be sized correctly.**

First of all, you must determine the expansion volume (the quantity of liquid that the expansion tank must absorb during the maximum expansion of the plant):

$$Ve = (VC * e + VP) * k$$

where:

Ve = expansion volume of the solar tank [litres]
VC = solar circuit capacity [litres]
e = dilation coefficient of the fluid

Example of values taken on by e:
e = 0.045 (fluid: water)
e = 0.070 (fluid: mix of water/glycol)

VP = capacity of solar panels [litres]
K = 1.1 safety coefficient

Then you calculate the nominal volume of the solar tank:

$$VS = Ve * \frac{(P_F + 1)}{(P_F - P_I)}$$

VS = nominal volume of the solar tank [litres]
Ve = expansion volume of the solar tank [litres]
PI = Pre-charge pressure = system filling pressure [bar]
PF = Calibration pressure of the safety valve [bar]

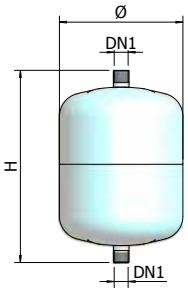
Having correctly sized the solar expansion tank, the best choice would be the **DS** series.
Thanks to the special bladder and the internal, anti-corrosive TOP-PRO® treatment that guarantees greater resistance to high temperatures and protection against aggressive anti-freeze liquid, the expansion tanks of the **DS** series guarantee long duration of installation for solar thermal systems.

# STP

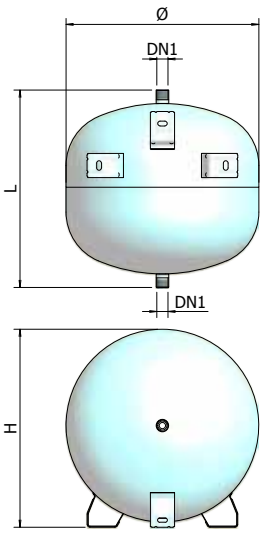
## TEMPERATURE REDUCING TANKS FOR SOLAR SYSTEMS

(5 - 50 LITRES)

### STP 5

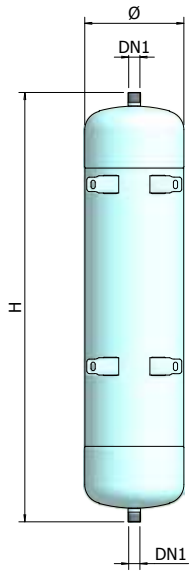



### STP 35/P - 50/P




STP 35/P - 50/P

### STP 27




STP 27

FOR SOLAR SYSTEMS

The STP series temperature reducing tanks are to be installed in solar systems before the expansion tank. They are necessary to disperse heat and therefore reduce the working temperature. Their application guarantees greater duration of the solar expansion tank.

**Characteristics:**

• Long-lasting epoxy powder paint, white.

• Min./max. working temperature: -10° / +110°C with a peak temperature of +130°C (max. 2 hours).

**Reference standard:**

• In compliance with Art. 3.3. of the European Directive 97/23/EC (PED) without CE marking.

**WARRANTY: 2 YEARS**

## DIMENSIONS

| MODEL | CODE | | Pmax | | | | | DN1 | | NOTES |
|---|---|---|---|---|---|---|---|---|---|---|
| | | LITRES | bar | bar | max | mm | mm | | mm | |
| STP-5 | A270J11 | 5 | 8 | 110°C | 205 | 240 | - | 3/4" | 210 X 210 X 250 | |
| STP-8 | A270J16 | 8 | 8 | 110°C | 205 | 320 | - | 3/4" | 210 X 210 X 320 | |
| STP-12 | A270J20 | 12 | 8 | 110°C | 270 | 315 | - | 3/4" | 280 X 280 X 310 | |
| STP-18 | A270J24 | 18 | 8 | 110°C | 270 | 420 | - | 3/4" | 280 X 280 X 450 | |
| STP-24 | A270J27 | 24 | 8 | 110°C | 320 | 335 | - | 3/4" | 330 X 330 X 375 | |
| STP-27 | A270J29 | 27 | 8 | 110°C | 205 | 890 | - | 3/4" | 215 X 215 X 910 | |
| STP-35 | A270L31 | 35 | 10 | 110°C | 400 | 415 | 405 | 3/4" | 410 x 410 x 410 | |
| STP-50 | A270L34 | 50 | 10 | 110°C | 400 | 415 | 520 | 3/4" | 410 x 410 x 535 | |

## WORKING PRINCIPLES OF DRAIN-BACK

The STP series temperature reducing tanks can also be used as DRAIN-BACK systems.
The DRAIN-BACK systems protect the cylinder from overheating and the solar collectors from the risk of freezing.

When the temperature of the panels is lower than the cylinder temperature (Diagram A), the solar circuit pump is stopped and the fluid remains on the bottom part of the circuit (under the DRAIN-BACK level). By doing so, inverse heat exchange is avoided (therefore the cylinder grants heat to the panels circuit) as well as possible freezing of the panels during the winter period.

Instead, when the temperature of the panels is over the cylinder temperature (Diagram B), the solar circuit pump moves the fluid that goes to heat the cylinder heat exchanger.

To avoid overheating, you can stop the pump when the cylinder reaches temperatures that are too high (e.g. when the cylinder reaches 85 °C, the pump can be switched off and the solar fluid stays in the lower part of the circuit, thereby avoiding overheating).
This type of system means anti-freeze doesn't have to be used and also, since it is the closed circuit system, therefore without oxygen, the risk of corrosion is practically eliminated.
Since the system is pressurised, there is no need to install expansion tanks, safety valves, etc.

**DIAGRAM A:**
Temperature of panels lower than the cylinder temperature (night condition, poor insulation or winter)

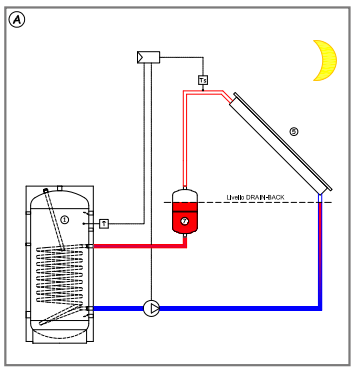
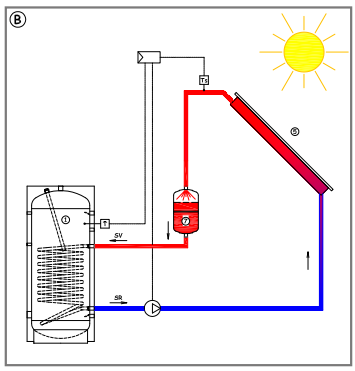



**DIAGRAM B:**
Temperature of panels over the cylinder temperature (good insulation condition)



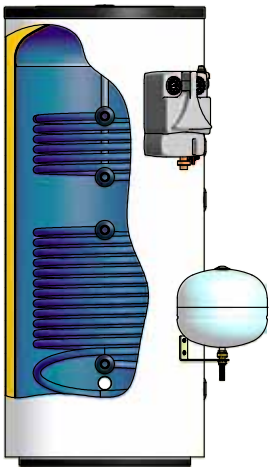

DS BST

# SOLAR SYSTEM

## GLASSLINED CYLINDERS FOR SOLAR HEATING SYSTEMS WITH FIXED DUAL HEAT EXCHANGERS, WITH BUILT-IN SOLAR KIT

(300 - 800 LITRES)

## SOLAR SYSTEM



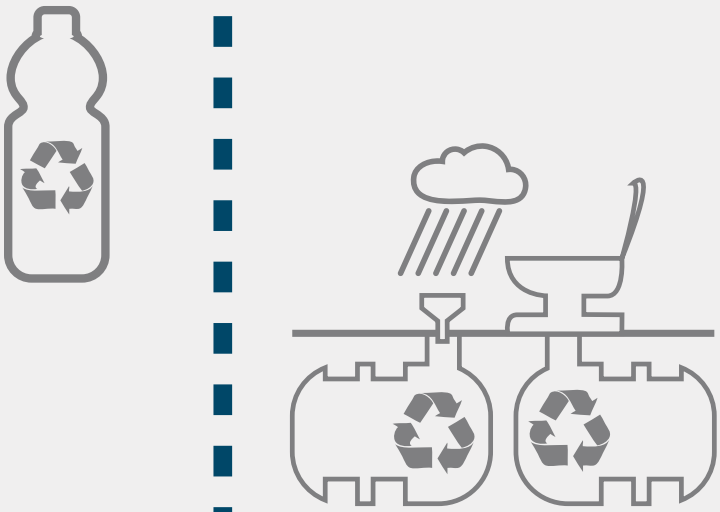
FOR FURTHER INFORMATION SEE PAGE 172

The SOLAR series is composed of glasslined cylinders with a dual coil, equipped as standard with a solar kit.
These kits are applied to forced circulation solar systems. Their main functions are those that enable circulation of the heating fluid in the primary system, regulate its temperature and guarantee safety from pressure increases.

You can choose from 3 solar kit models:
1. Solar kit with expansion tank and 1 way module
2. Solar kit with expansion tank and 2 way module
3. Solar kit with expansion tank and 2 way module with adjustment control unit

**BST:** **DS:**

# PLASTO
# POLYETHYLENE TANKS FOR ABOVE GROUND AND UNDERGROUND



## PLASTO: POLYETHYLENE TANKS FOR ABOVE GROUND

**68. CV:**
POLYETHYLENE TANKS FOR ABOVE GROUND (300 – 13.000 LITRES)

**69. PA:**
POLYETHYLENE TANKS FOR ABOVE GROUND (300 – 5.000 LITRES)

**70. CHL:**
POLYETHYLENE TANKS FOR ABOVE GROUND (300 – 5.000 LITRES)

**71. CHO:**
POLYETHYLENE TANKS FOR ABOVE GROUND (300 – 5.000 LITRES)

**72. CP:**
POLYETHYLENE TANKS FOR ABOVE GROUND (500 – 2.000 LITRES)

**73. CPZ:**
POLYETHYLENE TANKS FOR ABOVE GROUND (1,500 – 2.000 LITRES)

**74. CB:**
POLYETHYLENE TANKS FOR ABOVE GROUND (100 – 500 LITRES)

**75. BC:**
POLYETHYLENE TANKS FOR ABOVE GROUND (60 – 300 LITRES)

**76. SSC:**
POLYETHYLENE TANKS FOR ABOVE GROUND (300 – 500 LITRES)

**77. JAR:**
POLYETHYLENE TANKS FOR ABOVE GROUND (300 – 1.000 LITRES)

## WASTEWATER TREATMENT (UNDERGROUND INSTALLATION)

**78. DG / DG-PRO:**
POLYETHYLENE SAND/GREASE TRAPS (5 – 350 LITRES)

**79. ST:**
POLYETHYLENE SEPTIC TANKS (6 – 50 LITRES)

**80. IMHOFF:**
POLYETHYLENE IMHOFF TANKS (6 – 50 LITRES)

**81. FBC:**
BIOLOGICAL TREATMENT THROUGH LOW LOAD ACTIVATED SLUDGE PROCESS

**82. FOT:**
BIOLOGICAL TREATMENT THROUGH EXTENDED AERATION ACTIVATED SLUDGE PROCESS

**83. FAN:**
ANAEROBIC PERCOLATING FILTERS

**84. FAE:**
AEROBIC PERCOLATING FILTERS

**85. OIL:**
POLYETHYLENE GRAVITATIONAL OIL TRAPS (6 – 50 LITRES)

**86. OIL-C:**
COALESCING OIL-WATER SEPARATORS

**87.**
POPULATION EQUIVALENT: DEFINITION AND CALCULATION

**88.** EXAMPLES OF INSTALLATION

## PLASTO: POLYETHYLENE TANKS FOR UNDERGROUND

**90. CHU:**
POLYETHYLENE TANKS FOR UNDERGROUND (1.000 – 2.000 LITRES)

**91. CU:**
POLYETHYLENE TANKS FOR UNDERGROUND (3.000 – 10.000 LITRES)

## RAINWATER HARVESTING SYSTEMS

**93.** SIZING THE TANK

**94.** DIAGRAM OF SYSTEM WITH “S” OR “F” CONTROL UNIT

**95**. DIAGRAM OF SYSTEM WITH “PX” MODULE WITH SUBMERSIBLE PUMP

**96.** RAIN SYSTEM

**99.** ORDINARY MAINTENANCE INSTRUCTIONS FOR RAINWATER RECOVERY SYSTEMS

## INSTALLATION AND MAINTENANCE NOTES FOR ALL PLASTO LINE TANKS

**100.** INSTRUCTIONS FOR CORRECT UNDERGROUND PLACEMENT OF ALL PLASTO UNDERGROUND TANKS

**101.** INSTRUCTIONS FOR INSTALLATION OF POLYETHYLENE TANKS IN SERIES

**102.** WARRANTY CONDITIONS FOR THE PLASTO LINE TANKS

**103.** TABLE OF TANK CHEMICAL RESISTANCE TO SOME FLUIDS AND REAGENTS

# PLASTO – POLYETHYLENE TANKS

**PLASTO is a line of Elbi tanks in linear polyethylene specifically designed to contain liquids and for water purification.**
**The line offers a wide range of models designed to meet the various installation requirements in water distribution, storage of liquids in general, in rainwater recovery systems and in residential purification systems for wastewater.**

**The polymers used in the manufacturing process have been approved for storage of food-like materials in all European Community Countries (according to the CE Regulation NR. 10/2011 and the CE Regulation NR. 1935/2004) and in the United States of America.**

## Advantages:

• **Suitability for human consumption:** the LLDPE is compliant to all sanitary regulations world-wide;

• **durability:** all PLASTO tanks offer superior characteristic of durability compared to standard metallic storage tanks - either galvanized or stainless steel - because of their long-lasting basic compound and because they are not subject to oxidation. The raw material used to manufacture PLASTO storage tanks is U.V. resistant, thus preventing the formation of Algae;

• **solidity:** the rotomolding process ensures a monolithic structure with no welding, seals or other weak points. The thickness of PLASTO tanks is adequate to withstand impacts; PLASTO tanks are subject neither to deformation nor to age related deterioration;
• **versatility:** PLASTO tanks allow the installer to open additional openings with ease, even in positions different from the original configuration. Tanks can tolerate extreme temperature from –50°C to +60°C;

• **Versatility:** it is possible to have openings and inserts to even meet installation requirements not originally planned. The raw material used for manufacturing can support sudden temperature changes from -50° to +60°C;

• **lightness:** PLASTO tanks are much lighter than metallic equivalents, therefore moving and handling are much easier;

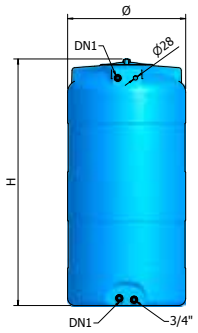
• **convenience:** PLASTO tanks are more economical than their metallic counterparts. They also ensure long-lasting reliability and protection for food-related materials.

• **recyclability:** PLASTO tanks are made with inert and recyclable raw materials.

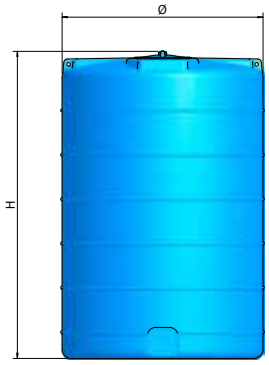
# CV

## POLYETHYLENE TANKS FOR ABOVE GROUND

**300 - 5.000**




**10.000 - 13.000**




For drinking water

Suitable to contain liquids other than water, in compliance with the table of resistance (page 103)

For above ground use only

For use with chemicals, see the table of tank chemical resistance (page 103).

ELBI guarantees the resistance of PLASTO tanks to liquids declared suitable (R) in the table of tank resistance.

**Maintenance of the characteristics of the liquids contained inside of PLASTO tanks should be checked by and is the responsibility of the user.**

**INSTALLATION IN SERIES:**
Keep an adequate distance (min. 20-25 cm) between the tanks to enable them to dilate freely during the filling phase.

**WARRANTY: 2 YEARS**

Version without holes available.

## DIMENSIONS

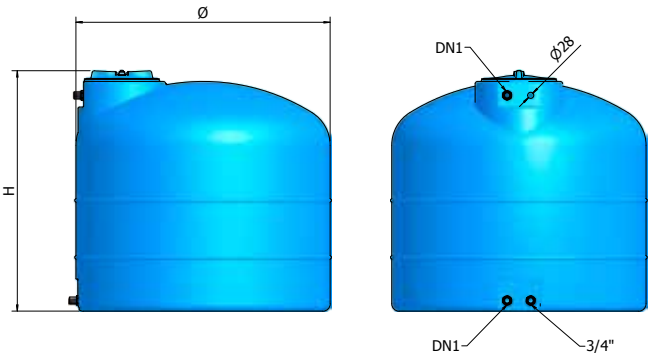
| MODEL | CODE | LITRES | mm | mm | DN1 | mm | NOTES |
|---|---|---|---|---|---|---|---|
| CV- 300 | A510051 | 300 | 630 | 1170 | 1" | 300 | |
| CV- 500 | A510055 | 500 | 700 | 1460 | 1" | 300 | |
| CV- 750 | A510059 | 750 | 800 | 1680 | 1" 1/4 | 300 | |
| CV- 1000 | A510062 | 1000 | 800 | 2180 | 1" 1/4 | 300 | |
| CV- 1500 | A510067 | 1500 | 1060 | 1920 | 1" 1/2 | 300 | |
| CV- 2000 | A510070 | 2000 | 1200 | 2015 | 1" 1/2 | 400 | |
| CV- 3000 | A510074 | 3000 | 1470 | 2050 | 1" 1/2 | 400 | |
| CV- 5000 | A510080 | 5000 | 1790 | 2210 | 2" | 400 | |
| CV-10000 (•) | A510092 | 10000 | 2300 | 2650 | - | 600 | |
| CV-13000 (•) | A510095 | 13000 | 2300 | 3400 | - | 600 | |

**(•) Tanks exclusively produced in the factory in Limena (PD).**

# PA

## POLYETHYLENE TANKS FOR ABOVE GROUND

**300 - 5.000**




For drinking water

Suitable to contain liquids other than water, in compliance with the table of resistance (page 103)

For above ground use only

For use with chemicals, see the table of tank chemical resistance (page 103).

ELBI guarantees the resistance of PLASTO tanks to liquids declared suitable (R) in the table of tank resistance.

**Maintenance of the characteristics of the liquids contained inside of PLASTO tanks should be checked by and is the responsibility of the user.**

**INSTALLATION IN SERIES:**
Keep an adequate distance (min. 20-25 cm) between the tanks to enable them to dilate freely during the filling phase.

Version without holes available.

**WARRANTY: 2 YEARS**

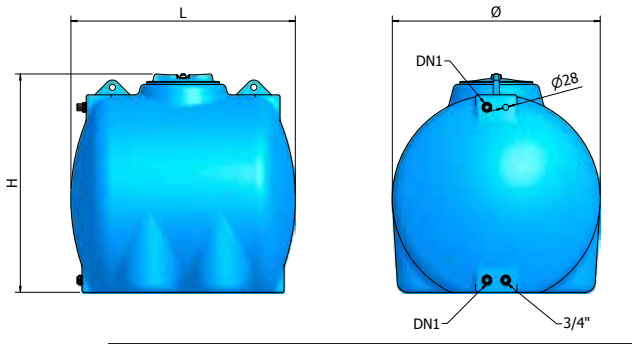
## DIMENSIONS

| MODEL | CODE | LITRES | mm | mm | DN1 | mm | NOTES |
|---|---|---|---|---|---|---|---|
| PA- 300 | A560051 | 300 | 770 | 770 | 1" | 200 | |
| PA- 500 | A560055 | 500 | 915 | 900 | 1" | 200 | |
| PA- 750 | A560059 | 750 | 1060 | 1000 | 1" 1/4 | 200 | |
| PA-1000 | A560062 | 1000 | 1205 | 1100 | 1" 1/4 | 300 | |
| PA-1500 | A560067 | 1500 | 1300 | 1300 | 1" 1/2 | 300 | |
| PA-2000 | A560070 | 2000 | 1450 | 1400 | 1" 1/2 | 400 | |
| PA-3000 | A560074 | 3000 | 1735 | 1500 | 1" 1/2 | 400 | |
| PA-5000 | A560080 | 5000 | 2030 | 1800 | 2" | 400 | |

# CHL

## POLYETHYLENE TANKS FOR ABOVE GROUND

**300 - 5.000**




For drinking water

Suitable to contain liquids other than water, in compliance with the table of resistance (page 103)

For above ground use only

For use with chemicals, see the table of tank chemical resistance (page 103).

ELBI guarantees the resistance of PLASTO tanks to liquids declared suitable (R) in the table of tank resistance.

**Maintenance of the characteristics of the liquids contained inside of PLASTO tanks should be checked by and is the responsibility of the user.**

**INSTALLATION IN SERIES:**
Keep an adequate distance (min. 20-25 cm) between the tanks to enable them to dilate freely during the filling phase.

Version without holes available.

**WARRANTY: 2 YEARS**

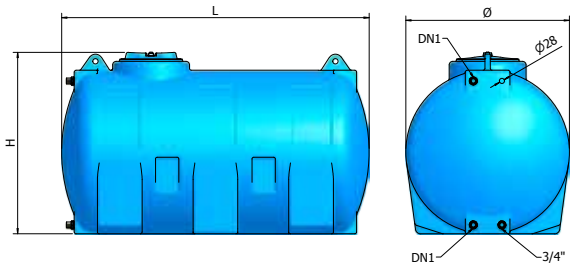
## DIMENSIONS

| MODEL | CODE | | | | | DN1 | | NOTES |
|---|---|---|---|---|---|---|---|---|
| | | LITRES | mm | mm | mm | | mm | |
| CHL- 300 | A610051 | 300 | 750 | 775 | 790 | 1" | 200 | |
| CHL- 500 | A610055 | 500 | 850 | 900 | 980 | 1" | 300 | |
| CHL- 750 | A610059 | 750 | 1000 | 1050 | 1080 | 1" 1/4 | 300 | |
| CHL-1000 | A610062 | 1000 | 1100 | 1155 | 1150 | 1" 1/4 | 400 | |
| CHL-1500 | A610067 | 1500 | 1250 | 1305 | 1350 | 1" 1/2 | 400 | |
| CHL-2000 | A610070 | 2000 | 1400 | 1455 | 1430 | 1" 1/2 | 400 | |
| CHL-3000 | A610074 | 3000 | 1550 | 1605 | 1750 | 1" 1/2 | 400 | |
| CHL-5000 | A610080 | 5000 | 1820 | 1875 | 2080 | 2" | 400 | |

# CHO

## POLYETHYLENE TANKS FOR ABOVE GROUND

**300 - 5.000**




For drinking water

Suitable to contain liquids other than water, in compliance with the table of resistance (page 103)

For above ground use only

For use with chemicals, see the table of tank chemical resistance (page 103).

ELBI guarantees the resistance of PLASTO tanks to liquids declared suitable (R) in the table of tank resistance.

**Maintenance of the characteristics of the liquids contained inside of PLASTO tanks should be checked by and is the responsibility of the user.**

**INSTALLATION IN SERIES:**
Keep an adequate distance (min. 20-25 cm) between the tanks to enable them to dilate freely during the filling phase.

Version without holes available.

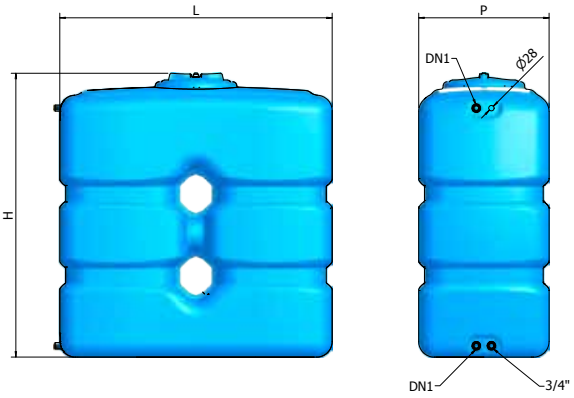
**WARRANTY: 2 YEARS**

## DIMENSIONS

| MODEL | CODE | | | | | DN1 | | NOTES |
|---|---|---|---|---|---|---|---|---|
| | | LITRES | mm | mm | mm | | mm | |
| CHO- 300 | A580051 | 300 | 625 | 705 | 1100 | 1" | 200 | |
| CHO- 500 | A580055 | 500 | 720 | 800 | 1500 | 1" | 300 | |
| CHO- 750 | A580059 | 750 | 820 | 900 | 1580 | 1" 1/4 | 300 | |
| CHO-1000 | A580062 | 1000 | 915 | 995 | 1720 | 1" 1/4 | 300 | |
| CHO-1500 | A580067 | 1500 | 1155 | 1255 | 1630 | 1" 1/2 | 400 | |
| CHO-2000 | A580070 | 2000 | 1300 | 1400 | 1700 | 1" 1/2 | 400 | |
| CHO-3000 | A580074 | 3000 | 1450 | 1550 | 2000 | 1" 1/2 | 400 | |
| CHO-5000 | A580080 | 5000 | 1740 | 1840 | 2310 | 2" | 400 | |

# CP
## POLYETHYLENE TANKS FOR ABOVE GROUND

**500 - 2.000**




For drinking water

Suitable to contain liquids other than water, in compliance with the table of resistance (page 103)

For above ground use only

For use with chemicals, see the table of tank chemical resistance (page 103).

ELBI guarantees the resistance of PLASTO tanks to liquids declared suitable (R) in the table of tank resistance.

**Maintenance of the characteristics of the liquids contained inside of PLASTO tanks should be checked by and is the responsibility of the user.**

**INSTALLATION IN SERIES:**
Keep an adequate distance (min. 20-25 cm) between the tanks to enable them to dilate freely during the filling phase.

**WARRANTY: 2 YEARS**

Version without holes available.

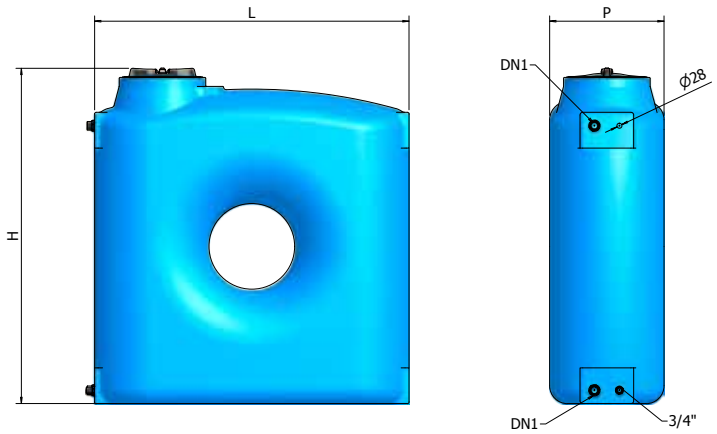
## DIMENSIONS

| MODEL | CODE | LITRES | mm | mm | DN1 | mm | NOTES |
|---|---|---|---|---|---|---|---|
| CP- 500 | 1720435 | 500 | 1060 | 700 x 840 | 1" | 300 | |
| CP- 800 | 1720439 | 800 | 1320 | 670 x 1290 | 1" | 300 | |
| CP-1000 | 1720442 | 1000 | 1420 | 670 x 1400 | 1" | 300 | |
| CP-2000 | 1720447 | 2000 | 1875 | 690 x 1960 | 1" 1/4 | 400 | |

# CPZ

## POLYETHYLENE TANKS FOR ABOVE GROUND

### 1.500 - 2.000




For drinking water

Suitable to contain liquids other than water, in compliance with the table of resistance (page 103)

For above ground use only

For use with chemicals, see the table of tank chemical resistance (page 103).

ELBI guarantees the resistance of PLASTO tanks to liquids declared suitable (R) in the table of tank resistance.

**Maintenance of the characteristics of the liquids contained inside of PLASTO tanks should be checked by and is the responsibility of the user.**

**INSTALLATION IN SERIES:**
Keep an adequate distance (min. 20-25 cm) between the tanks to enable them to dilate freely during the filling phase.

Version without holes available.

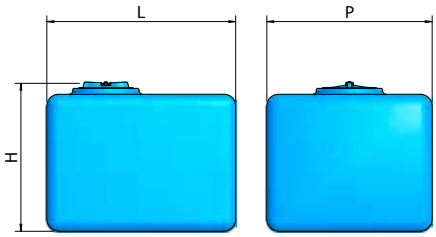
**WARRANTY: 2 YEARS**

### DIMENSIONS

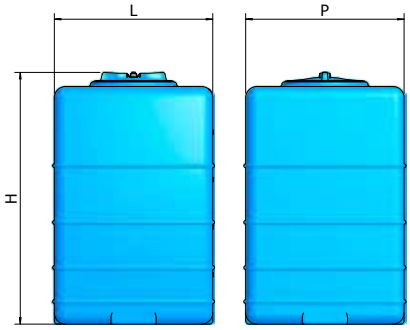
| MODEL | CODE | LITRES | mm | mm | DN1 | mm | NOTES |
|---|---|---|---|---|---|---|---|
| CPZ 1500 | A620067 | 1500 | 1860 | 640 x 1760 | 1"1/2 | 300 | |
| CPZ 2000 | A620070 | 2000 | 2050 | 695 x 1910 | 1"1/2 | 300 | |

# CB
## POLYETHYLENE TANKS FOR ABOVE GROUND

### 100 - 500




### CBA - 500




For drinking water

Suitable to contain liquids other than water, in compliance with the table of resistance (page 103)

For above ground use only

**WARRANTY: 2 YEARS**

For use with chemicals, see the table of tank chemical resistance (page 103).

ELBI guarantees the resistance of PLASTO tanks to liquids declared suitable (R) in the table of tank resistance.

**Maintenance of the characteristics of the liquids contained inside of PLASTO tanks should be checked by and is the responsibility of the user.**

**INSTALLATION IN SERIES:**
Keep an adequate distance (min. 20-25 cm) between the tanks to enable them to dilate freely during the filling phase.

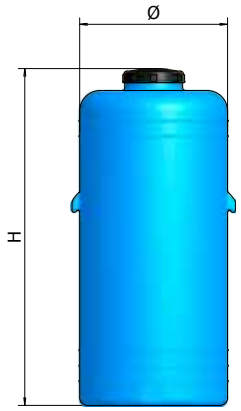
Version without holes available.

### DIMENSIONS

| MODEL | CODE | LITRES | mm | mm | mm | NOTES |
|---|---|---|---|---|---|---|
| CB-100 | 1720624 | 100 | 575 | 500 x 500 | 200 | |
| CB-200 | 1720629 | 200 | 625 | 600 x 700 | 200 | |
| CB-300 | 1720633 | 300 | 655 | 700 x 800 | 200 | |
| CB-500 | A530055 00010 | 500 | 770 | 716 x 1066 | 300 | |
| CBA-500 | A530056 00010 | 500 | 1120 | 716 x 716 | 300 | |

# BC
## POLYETHYLENE TANKS FOR ABOVE GROUND

**50 - 300**




For drinking water

Suitable to contain liquids other than water, in compliance with the table of resistance (page 103)

For above ground use only

**WARRANTY: 2 YEARS**

For use with chemicals, see the table of tank chemical resistance (page 103).

ELBI guarantees the resistance of PLASTO tanks to liquids declared suitable (R) in the table of tank resistance.

**Maintenance of the characteristics of the liquids contained inside of PLASTO tanks should be checked by and is the responsibility of the user.**

**INSTALLATION IN SERIES:**
Keep an adequate distance (min. 20-25 cm) between the tanks to enable them to dilate freely during the filling phase.

Version without holes available.

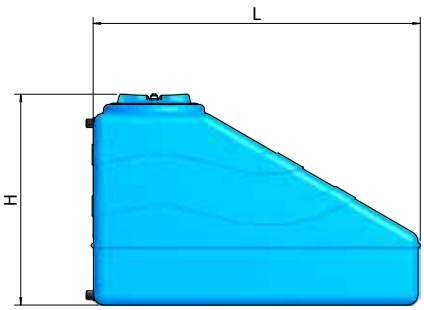
## DIMENSIONS

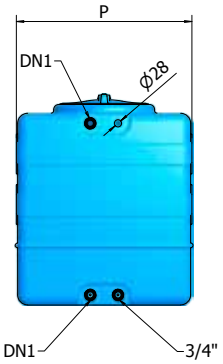
| MODEL | CODE | LITRES | mm | mm | mm | NOTES |
|---|---|---|---|---|---|---|
| BC- 60 | A570035 | 60 | 380 | 650 | 140 | |
| BC-100 | A570038 | 100 | 460 | 710 | 140 | |
| BC-150 | A570043 | 150 | 460 | 1025 | 140 | |
| BC-200 | A570047 | 200 | 575 | 895 | 215 | |
| BC-250 | A570049 | 250 | 575 | 1090 | 215 | |
| BC-300 | A570051 | 300 | 575 | 1290 | 215 | |

# SSC

## POLYETHYLENE TANKS FOR ABOVE GROUND

**300 - 500**




For drinking water

Suitable to contain liquids other than water, in compliance with the table of resistance (page 103)

For above ground use only

For use with chemicals, see the table of tank chemical resistance (page 103).

ELBI guarantees the resistance of PLASTO tanks to liquids declared suitable (R) in the table of tank resistance.

**Maintenance of the characteristics of the liquids contained inside of PLASTO tanks should be checked by and is the responsibility of the user.**

**INSTALLATION IN SERIES:**
Keep an adequate distance (min. 20-25 cm) between the tanks to enable them to dilate freely during the filling phase.

Version without holes available.

**WARRANTY: 2 YEARS**

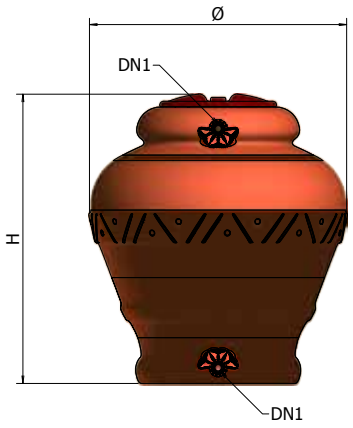
## DIMENSIONS

| MODEL | CODE | | | | DN1 | | NOTES |
|---|---|---|---|---|---|---|---|
| | | LITRES | mm | mm | | mm | |
| SSC 300 | A600051 | 300 | 680 | 610 x 1150 | 1" | 300 | |
| SSC 500 | A600055 | 500 | 850 | 700 x 1300 | 1" | 300 | |

# JAR

## POLYETHYLENE TANKS FOR ABOVE GROUND

**300 - 1.000**




For drinking water

Suitable to contain liquids other than water, in compliance with the table of resistance (page 103)

For above ground use only

For use with chemicals, see the table of tank chemical resistance (page 103).

ELBI guarantees the resistance of PLASTO tanks to liquids declared suitable (R) in the table of tank resistance.

**Maintenance of the characteristics of the liquids contained inside of PLASTO tanks should be checked by and is the responsibility of the user.**

**INSTALLATION IN SERIES:**
Keep an adequate distance (min. 20-25 cm) between the tanks to enable them to dilate freely during the filling phase.

Version without holes available.

**WARRANTY: 2 YEARS**

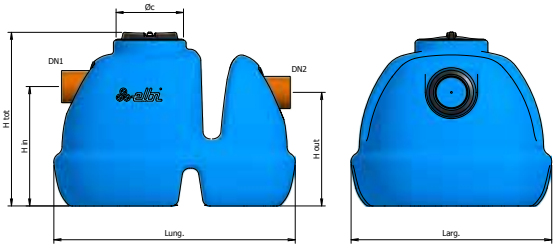
## DIMENSIONS

| MODEL | CODE | | | | DN1 | | NOTES |
|---|---|---|---|---|---|---|---|
| | | LITRES | mm | mm | | mm | |
| JAR- 300 TC | A5H0051 | 300 | 800 | 1080 | 1" | 400 | |
| JAR- 500 TC | A5H0055 | 518 | 1020 | 1140 | 1" | 400 | |
| JAR- 750 TC | A5H0059 | 750 | 1115 | 1250 | 1" | 400 | |
| JAR-1000 TC | A5H0062 | 1020 | 1190 | 1600 | 1" | 400 | |

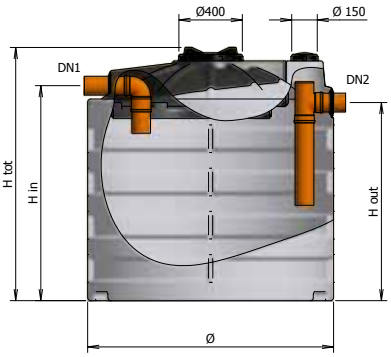
# DG / DG-PRO WASTEWATER TREATMENT

## POLYETHYLENE SAND \ GREASE TRAPS FOR UNDERGROUND

### DG 5 - 20




### DG-PRO 45 - 350




Not for drinking water

Handling by forklift

Model for underground only (DG-PRO 45 - 350)

Above ground only (DG 5 - 20)

**Use:**
Primary treatment of residential grey water.
The sand/grease trap is installed near the kitchen drains, laundry and bathroom to separate grease, foam, vegetable and animal fats and other solid particles in the waste water.

**Operation:**
The system takes advantage of gravity to eliminate all those solid particles characterized by a specific weight greater than that of water such as to deposit on the bottom of the tank. Furthermore, for flotation, oils, fats and substances with specific weight lower than water get separated from each other; this phenomenon reduces the presence of oily substances which tend to coat biological materials thus preventing oxidation.

**Maintenance:**
You are advised to inspect the sand/grease traps at least once a year. If you find excess sludge and/or deposits present, contact specialist companies to remove the solid sediments and the greasy/oily parts that sticks to the inner walls.

**Specifications item:**
Sand/grease trap manufactured in rotational polyethylene, in a single structure without joints and equipped with inlet and outlet pipes, and lid for inspection and sampling.
Suitable for underground installation.

**Reference standard:**
Compliance with standard EN 1825-1 and Legislative Decree no. 152/2006.
CE pending

**WARRANTY: 2 YEARS**

## DIMENSIONS

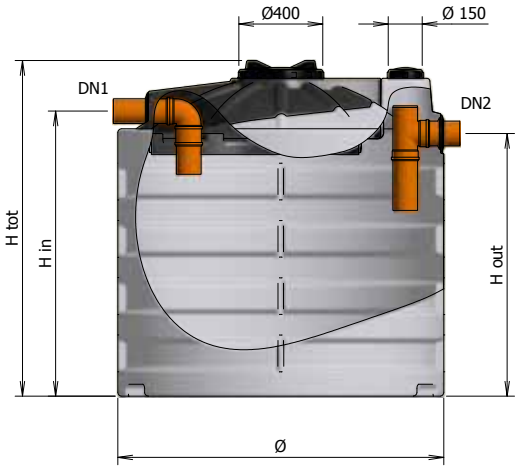
| MODEL | CODE | P.E. | TOT mm | IN mm | OUT mm | mm | fat volume LITRES | sludge volume LITRES | total volume LITRES | DN1/DN2 mm | NOTES |
|---|---|---|---|---|---|---|---|---|---|---|---|
| DG 5 | A5O0005 | 2-6 | 600 | 410 | 390 | 830x690 | 10 | 25 | 95 | 110 | |
| DG 10 | A5O0010 | 7-11 | 710 | 520 | 500 | 995x825 | 20 | 50 | 190 | 110 | |
| DG 15 | A5O0015 | 12-16 | 795 | 605 | 585 | 1135x945 | 30 | 75 | 285 | 110 | |
| DG 20 | A5O0020 | 17-21 | 875 | 685 | 665 | 1255x1040 | 40 | 100 | 380 | 110 | |

| MODEL | CODE | P.E. | TOT mm | IN mm | OUT mm | mm | fat volume LITRES | sludge volume LITRES | total volume LITRES | DN1/DN2 mm | NOTES |
|---|---|---|---|---|---|---|---|---|---|---|---|
| DG-PRO 45 | A5O0045 | 30-52 | 1240 | 1030 | 935 | 1310 | 90 | 225 | 853 | 110 | |
| DG-PRO 60 | A5O0060 | 53-70 | 1500 | 1290 | 1195 | 1310 | 120 | 300 | 1170 | 110 | |
| DG-PRO 75 | A5O0075 | 71-85 | 1760 | 1550 | 1455 | 1310 | 150 | 375 | 1490 | 110 | |
| DG-PRO 110 | A5O0110 | 86-110 | 1700 | 1445 | 1330 | 1650 | 220 | 550 | 2170 | 125 | |
| DG-PRO 140 | A5O0140 | 111-135 | 1990 | 1735 | 1620 | 1650 | 280 | 700 | 2740 | 125 | |
| DG-PRO 170 | A5O0170 | 136-185 | 2280 | 2025 | 1910 | 1650 | 340 | 850 | 3310 | 125 | |
| DG-PRO 240 | A5O0240 | 186-265 | 1900 | 1605 | 1475 | 2270 | 480 | 1200 | 4710 | 160 | |
| DG-PRO 350 | A5O0350 | 266-370 | 2430 | 2130 | 2000 | 2270 | 700 | 1750 | 6710 | 160 | |

# ST WASTEWATER TREATMENT

## POLYETHYLENE SEPTIC TANKS FOR UNDERGROUND

## 6- 50




Not for drinking water

Model for underground only

Handling by forklift

**Use:**
Primary treatment of residential black water (sewage). The septic tank is installed downstream of the grease traps and/or drains of sewage (w.c.) to purify the drains through an anaerobic digestion process.
The septic tanks can be installed in series (individual, dual chamber and three chambers).

**Operation:**
Particularly indicated to purify drains in residential settlements of small size. Inside of septic tanks the process of separation of oils and greases comes through flotation, while the separation of solids occurs through sedimentation. Furthermore, a process of ANAEROBIC digestion (without the presence of oxygen) takes place. The output will result in waste water with solubilized and dispersed solids.
Battery installation increases the treatment efficacy and significantly reduces the amount of suspended solids.

**WARRANTY: 2 YEARS**

**Maintenance:**
You are advised to inspect ELBI septic tanks at least once a year. This is to avoid an excessive accumulation of sediments that may produce an excess of digestion gas, bad smells and a reduction of the useful volume for the proper functioning of the septic tank. When cleaning it is recommended to leave on the bottom part of the sediment to facilitate the re- activation of the anaerobic digestion process.

**Specifications item:**
Septic tank manufactured in rotational polyethylene, in a single structure free of joints and reinforcement plating, equipped with inlet and outlet pipes and lid for inspection and sampling.
Suitable for underground installation.

**Reference standards:**
Compliance with standard EN 12566-1
and Legislative Decree no. 152/2006.
CE pending.

## DIMENSIONS

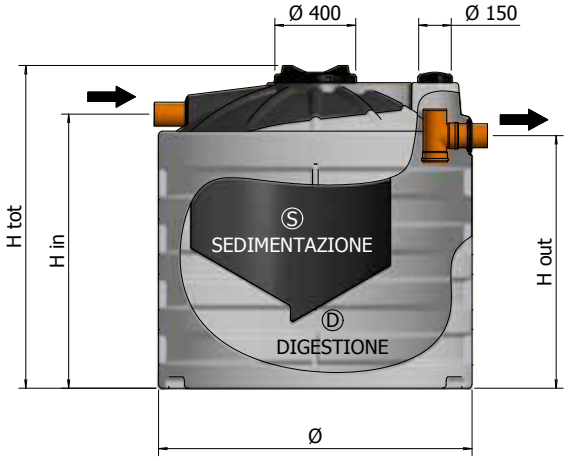
| MODEL | CODE | P.E. | TOT mm | IN mm | OUT mm | mm | useful volume LITRES | DN1/DN2 mm | NOTES |
|---|---|---|---|---|---|---|---|---|---|
| ST 6 | A5P0006 | 7-8 | 1240 | 1030 | 935 | 1310 | 853 | 110 | |
| ST 9 | A5P0009 | 9-10 | 1500 | 1290 | 1195 | 1310 | 1150 | 110 | |
| ST 12 | A5P0012 | 11-13 | 1760 | 1550 | 1455 | 1310 | 1490 | 110 | |
| ST 15 | A5P0015 | 14-17 | 1700 | 1445 | 1330 | 1650 | 2170 | 125 | |
| ST 18 | A5P0018 | 18-21 | 1990 | 1735 | 1620 | 1650 | 2740 | 125 | |
| ST 25 | A5P0025 | 24-25 | 2280 | 2025 | 1910 | 1650 | 3310 | 125 | |
| ST 35 | A5P0035 | 34-35 | 1900 | 1605 | 1475 | 2270 | 4710 | 160 | |
| ST 50 | A5P0050 | 47-50 | 2430 | 2130 | 2000 | 2270 | 6710 | 160 | |

P.E. Population equivalent

# IMHOFF WASTEWATER TREATMENT

## POLYETHYLENE IMHOFF TANKS FOR UNDERGROUND

**6 - 50**




Not for drinking water

Model for underground only

Handling by forklift

**Use:**
Imhoff septic tank for primary treatment of residential wastewater.

**Operation:**
The IMHOFF biological tank is a system for primary sedimentation, accumulation and anaerobic digestion (carried out by organisms that live in the absence of oxygen) of domestic drains in buildings that are not served by urban sewage mains. Upstream of the IMHOFF tank a grease trap should be installed to avoid greasy/oily substances preventing biological oxidation. Any rain water drains must be deviated downstream of the IMHOFF tank.

**Maintenance:**
You are advised to inspect the IMHOFF ELBI tanks every 6 months (12 months for sensitive areas). This avoids excess accumulation of sediment that can cause excess digestive gas, bad smells and a reduction of the useful volume for the proper functioning of IMHOFF tank.

**Specification item:**
Imhoff biological tank for the primary treatment of residential wastewater manufactured in rotational polyethylene, a single structure without joints and equipped with inlet and outlet pipes, a sedimentation cone, a digestion tank and lid for inspection and sampling. Suitable for underground installation.

**Reference standards:**
Compliance with standard EN 12566-3
and Legislative Decree no. 152/2006.
CE pending.

**WARRANTY: 2 YEARS**

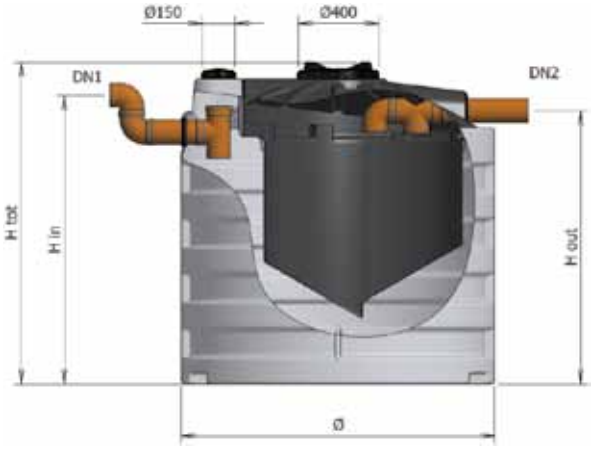
## DIMENSIONS

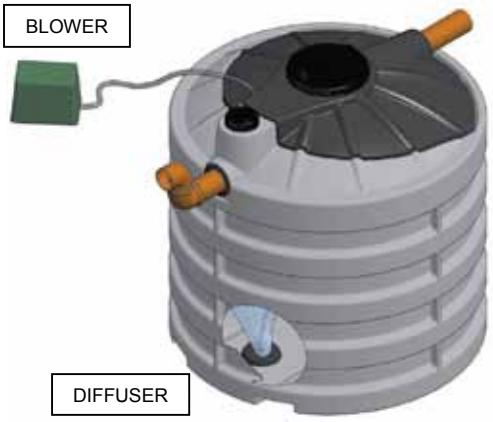
| MODEL | CODE | P.E. | TOT mm | IN mm | OUT mm | Ø mm | S LITRES | D LITRES | DN1/DN2 mm | NOTES |
|---|---|---|---|---|---|---|---|---|---|---|
| IMHOFF 6 | A5N0006 | 6-7 | 1240 | 1030 | 935 | 1310 | 255 | 730 | 110 | |
| IMHOFF 9 | A5N0009 | 8-9 | 1500 | 1290 | 1195 | 1310 | 365 | 930 | 110 | |
| IMHOFF 12 | A5N0012 | 10-12 | 1760 | 1550 | 1455 | 1310 | 490 | 1240 | 110 | |
| IMHOFF 15 | A5N0015 | 13-15 | 1700 | 1445 | 1330 | 1650 | 630 | 1520 | 125 | |
| IMHOFF 18 | A5N0018 | 16-18 | 1990 | 1735 | 1620 | 1650 | 760 | 1920 | 125 | |
| IMHOFF 25 | A5N0025 | 21-25 | 2280 | 2025 | 1910 | 1650 | 1000 | 2520 | 125 | |
| IMHOFF 35 | A5N0035 | 30-36 | 1900 | 1605 | 1475 | 2270 | 1450 | 3610 | 160 | |
| IMHOFF 50 | A5N0050 | 42-50 | 2430 | 2130 | 2000 | 2270 | 2050 | 5050 | 160 | |

P.E. Population equivalent

# FBC WASTEWATER TREATMENT

## BIOLOGICAL TREATMENT THROUGH LOW LOAD ACTIVATED SLUDGE PROCESS




Not for drinking water

Model for underground only

Handling by forklift

**Use:**
Secondary treatment of residential black water.
Low-load activated sludge treatment plants are to be installed downstream of the IMHOFF tank in order to allow the drain of purified water directly into the ground through sub-irrigation, or directly into a water course, without the risk of polluting the environment.

**Operation:**
The active sludge biological process refers to a type of aerobic treatment conducted by aeration of the wastewater in a biological reactor in presence of a microbial population (biomass).
In activated sludge plants the bacterial populations, constituted by numerous microorganisms, are produced continuously within the reactor following the biochemical reactions of degradation of organic carbon and nutrient utilization, resulting in synthesis of new cellular material.
The activated sludge plants are equipped with blowers that increase the presence of oxygen inside them thereby increasing the capacity of the degradation of the organic load by aerobic bacteria. In fact, these bacteria exploit the oxygen to consume the biodegradable material, and the greater is the presence of oxygen, the greater is the ability to "consume" the biodegradable organic material inside the tanks.
Low Load activated sludge plants are designed for volume not exceeding 0,5 (Cv < 0,5 $BOD_5$ / $m^3$) and daily organic volume not exceeding 48 g/ P.E.
The low-load activated sludge plants are equipped with internal sedimentation tank to separate the purified effluent from the activated sludge that will accumulate in the digester.

**WARRANTY: 2 YEARS**

**Maintenance:**
You are advised to inspect and clean the low-load activated sludge treatment plant in conjunction with the cleaning of the IMHOFF tank. This is to avoid excessive accumulation of surplus sludge.

**Specifications item:**
The activated sludge purification unit is a mono-block realized in linear rotational polyethylene, in a single structure without joints, and equipped with inlet and outlet pipes, a sedimentation chamber, a digestion tank and lids for inspection and sampling.
The system must be equipped with blower and micro-bubbles diffuser, according to the plant specifications. Blower and micro-bubbles diffuser are not standard supplied.
The data in the below table relating to the blower refer to an operating time of 22 hours; for different conditions or for further information contact our technical dpt.
Suitable for underground installation.

**Reference standards:**
Compliance with standard EN 12566-3
and Legislative Decree no. 152/2006.
CE pending.

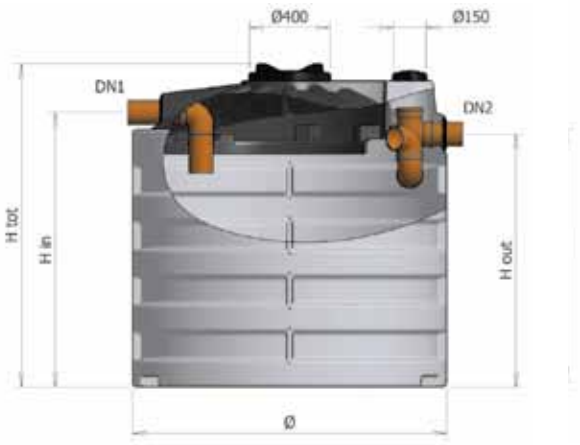
**SEE ACCESSORIES ON PAGE 240**

## DIMENSIONS

| MODEL | CODE | P.E. | TOT mm | IN mm | OUT mm | mm | S SEDIMENTATION LITRES | D DIGESTION LITRES | DN1/DN2 mm | Retention Time [hrs.] Aeration | Retention Time [hrs.] Sedimentation | Blower Flow [lt / min] | No. of Air Diffusers | NOTES |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| FBC 6 | A5C0106 | 6-7 | 1240 | 1115 | 1030 | 1310 | 255 | 730 | 110 | 12,6 | 4,9 | 50 | 1 | |
| FBC 9 | A5C0109 | 8-9 | 1500 | 1375 | 1290 | 1310 | 365 | 930 | 110 | 12,4 | 4,9 | 65 | 1 | |
| FBC 12 | A5C0112 | 10-12 | 1760 | 1635 | 1550 | 1310 | 490 | 1240 | 110 | 13,6 | 5,4 | 80 | 1 | |
| FBC 15 | A5C0115 | 13-15 | 1700 | 1525 | 1445 | 1650 | 630 | 1520 | 125 | 13,1 | 5,4 | 100 | 2 | |
| FBC 18 | A5C0118 | 16-18 | 1990 | 1815 | 1735 | 1650 | 760 | 1920 | 125 | 12,9 | 5,1 | 130 | 2 | |
| FBC 25 | A5C0125 | 20-23 | 2280 | 2105 | 2025 | 1650 | 1000 | 2520 | 125 | 13,2 | 5,2 | 165 | 2 | |
| FBC 35 | A5C0135 | 28-32 | 1900 | 1705 | 1605 | 2270 | 1450 | 3610 | 160 | 13,6 | 5,5 | 230 | 3 | |
| FBC 50 | A5C0150 | 40-45 | 2430 | 2230 | 2130 | 2270 | 2050 | 5050 | 160 | 13,5 | 5,5 | 325 | 4 | |

# FOT WASTEWATER TREATMENT

## BIOLOGICAL TREATMENT THROUGH EXTENDED AERATION ACTIVATED SLUDGE PROCESS





Not for drinking water

Model for underground only

Handling by forklift

**Use:**
Secondary treatment of residential black water.
Total oxidation biological treatment plants are the right equipment to achieve a high level of purification in wastewater generated in restaurants, hotels, camping and houses without sewer connections.
Extended aeration activated sludge treatment plants can be installed directly downstream of the degreaser in order to allow the drain of purified water directly into the ground through sub-irrigation, or directly into a water course, without the risk of polluting the environment.

**Operation:**
The active sludge biological process refers to a type of aerobic treatment conducted by aeration of the wastewater in a biological reactor in presence of a microbial population (biomass).
In activated sludge plants the bacterial populations, constituted by numerous microorganisms, are produced continuously within the reactor following the biochemical reactions of degradation of organic carbon and nutrient utilization, resulting in synthesis of new cellular material.
The activated sludge plants are equipped with blowers that increase the presence of oxygen inside them thereby increasing the capacity of the degradation of the organic load by aerobic bacteria. In fact, these bacteria exploit the oxygen to consume the biodegradable material, and the greater is the presence of oxygen, the greater is the ability to "consume" the biodegradable organic material inside the tanks.
The extended aeration biological treatment plants are designed for volume not exceeding 0,25 (Cv < 0,25 $BOD_5$ / $m^3$) and daily organic volume not exceeding 60 g/P.E.
The total oxidation biological treatment plant does not include the inner decanter (sedimentation chamber) as the high flow of oxygen permit the total oxidation of sludge.

**WARRANTY: 2 YEARS**

**Maintenance:**
You are advised to inspect and clean the low-load activated sludge treatment plant in conjunction with the cleaning of the DEGREASER tank. This is to avoid excessive accumulation of surplus sludge.

**Specification item:**
The extended aeration activated sludge purification unit is a mono-block realized in linear rotational polyethylene, in a single structure without joints, and equipped with inlet and outlet pipes, a digestion tank and lids for inspection and sampling.
The system must be equipped with blower and micro-bubbles diffuser, according to the plant specifications. Blower and micro-bubbles diffuser are not standard supplied.
The data in the below table relating to the blower refer to an operating time of 22 hours; for different conditions or for further information contact our technical dpt.
Suitable for underground installation.

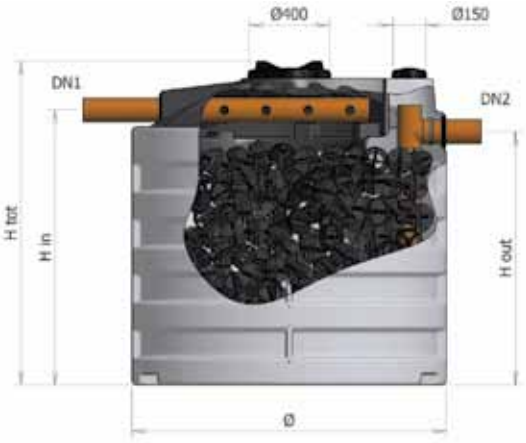
**Reference standards:**
Compliance with standard EN 12566-3 and Legislative Decree no. 152/2006.
CE pending.

**SEE ACCESSORIES ON PAGE 240**

## DIMENSIONS

| MODEL | CODE | P.E. | TOT mm | IN mm | OUT mm | mm | Total Volume [lt] | DN1/DN2 mm | Retention Time [hrs.] | Blower Flow [lt / min] | No. of Air Diffusers | NOTES |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| FOT 6 | A5D0206 | 6-7 | 1240 | 1030 | 935 | 1310 | 985 | 110 | 29,7 | 35 | 1 | |
| FOT 9 | A5D0209 | 8-9 | 1500 | 1290 | 1195 | 1310 | 1295 | 110 | 31,2 | 45 | 1 | |
| FOT 12 | A5D0212 | 10-12 | 1760 | 1550 | 1455 | 1310 | 1730 | 110 | 29,8 | 62 | 1 | |
| FOT 15 | A5D0215 | 13-15 | 1700 | 1445 | 1330 | 1650 | 2150 | 125 | 32,4 | 72 | 1 | |
| FOT 18 | A5D0218 | 16-18 | 1990 | 1735 | 1620 | 1650 | 2680 | 125 | 32,3 | 90 | 2 | |
| FOT 25 | A5D0225 | 21-25 | 2280 | 2025 | 1910 | 1650 | 3520 | 125 | 32,6 | 120 | 2 | |
| FOT 35 | A5D0235 | 30-36 | 1900 | 1605 | 1475 | 2270 | 5060 | 160 | 30,5 | 180 | 3 | |
| FOT 50 | A5D0250 | 42-50 | 2430 | 2130 | 2000 | 2270 | 7100 | 160 | 31,7 | 245 | 3 | |

# FAN WASTEWATER TREATMENT
## ANAEROBIC PERCOLATING FILTERS




Not for drinking water

Model for underground only

Handling by forklift

**Use:**
Secondary treatment of residential black water.
Aerobic percolating filters are to be installed downstream of the IMHOFF tank in order to allow the drain of purified water directly into the ground through sub-irrigation, or directly into a water course, without the risk of polluting the environment.

**Operation:**
This type of biological treatment system consists of a fixed bed of plastic media over which sewage or other wastewater flows downward and causes a layer of microbial slime (biofilm) to grow, covering the bed of media.
The biomass growing on the media brakes down organic matter under anaerobic conditions. The wastewater is sprayed on top of the filter and trickles through the media. After some time, microorganisms start to grow attached on the filter media, forming a biofilm.
ELBI Trickling filters are designed for a daily flow of 200 lt. / P.E. and daily organic volume of 48 $gBOD_5$ / P.E.

**Maintenance:**
You are advised to inspect and clean the low-load activated sludge treatment plant in conjunction with the cleaning of the IMHOFF tank. This is to avoid excessive accumulation of surplus sludge.

**Specification item:**
Anaerobic percolating filters are realized in linear rotational polyethylene, in a single structure without joints, and equipped with inlet and outlet pipes, plastic media and lids for inspection and sampling.
Suitable for underground installation.

**Reference standards:**
Compliance with standard EN 12566-3 and Legislative Decree no. 152/2006.
CE pending.

**SEE ACCESSORIES ON PAGE 240**

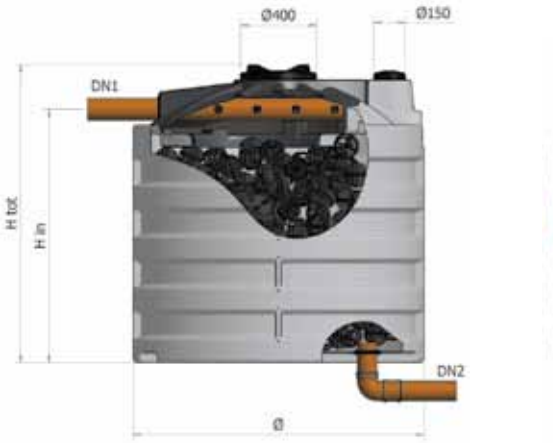
**WARRANTY: 2 YEARS**

## DIMENSIONS

| MODEL | CODE | P.E. | TOT mm | IN mm | OUT mm | mm | Filter Volume [lt] | Filter Surface [m²] | DN1/DN2 mm | NOTES |
|---|---|---|---|---|---|---|---|---|---|---|
| FAN 6 | A5B2006 | 6-7 | 1240 | 1030 | 935 | 1310 | 850 | 102 | 110 | |
| FAN 9 | A5B2009 | 8-9 | 1500 | 1290 | 1195 | 1310 | 1000 | 120 | 110 | |
| FAN 12 | A5B2012 | 10-12 | 1760 | 1550 | 1455 | 1310 | 1300 | 156 | 110 | |
| FAN 15 | A5B2015 | 13-15 | 1700 | 1445 | 1330 | 1650 | 2000 | 240 | 125 | |
| FAN 18 | A5B2018 | 16-18 | 1990 | 1735 | 1620 | 1650 | 2500 | 300 | 125 | |
| FAN 25 | A5B2025 | 21-25 | 2280 | 2025 | 1910 | 1650 | 3000 | 360 | 125 | |
| FAN 35 | A5B2035 | 30-36 | 1900 | 1605 | 1475 | 2270 | 4500 | 540 | 160 | |
| FAN 50 | A5B2050 | 42-50 | 2430 | 2130 | 2000 | 2270 | 6500 | 780 | 160 | |

# FAE WASTEWATER TREATMENT

## AEROBIC PERCOLATING FILTERS




Not for drinking water

Model for underground only

Handling by forklift

**Use:**
Secondary treatment of residential black water.
Aerobic percolating filters are to be installed downstream of the IMHOFF tank in order to allow the drain of purified water directly into the ground through sub-irrigation, or directly into a water course, without the risk of polluting the environment.

**Operation:**
This type of biological treatment system consists of a fixed bed of plastic media over which sewage or other wastewater flows downward and causes a layer of microbial slime (biofilm) to grow, covering the bed of media.
The biomass growing on the media brakes down organic matter under aerobic conditions. The wastewater is sprayed on top of the filter and trickles through the media. After some time, microorganisms start to grow attached on the filter media, forming a biofilm. Whilst they grow, they consume oxygen from the air and metabolize soluble and colloidal organic matter contained in the wastewater transforming them into $CO_2$.
ELBI Trickling filters are designed for a daily flow of 200 lt. / P.E. and daily organic volume of 48 g$BOD_5$ / P.E.

**Maintenance:**
You are advised to inspect and clean the low-load activated sludge treatment plant in conjunction with the cleaning of the IMHOFF tank. This is to avoid excessive accumulation of surplus sludge.

**Specifications item:**
Aerobic percolating filters are realized in linear rotational polyethylene, in a single structure without joints, and equipped with inlet and outlet pipes, plastic media and lids for inspection and sampling.
Suitable for underground installation.

**Reference standards:**
Compliance with standard EN 12566-3 and Legislative Decree no. 152/2006.
CE pending.

**SEE ACCESSORIES ON PAGE 240**

**WARRANTY: 2 YEARS**

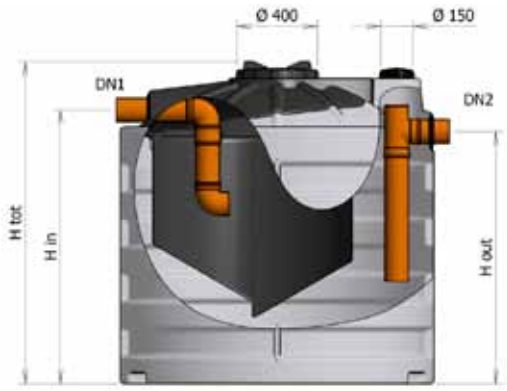
## DIMENSIONS

| MODEL | CODE | P.E. | TOT mm | IN mm | OUT mm | mm | Filter Volume [lt] | Filter Surface [m²] | DN1/DN2 mm | NOTES |
|---|---|---|---|---|---|---|---|---|---|---|
| FAE 6 | A5B1006 | 6-7 | 1240 | 1030 | 935 | 1310 | 850 | 102 | 110 | |
| FAE 9 | A5B1009 | 8-9 | 1500 | 1290 | 1195 | 1310 | 1000 | 120 | 110 | |
| FAE 12 | A5B1012 | 10-12 | 1760 | 1550 | 1455 | 1310 | 1300 | 156 | 110 | |
| FAE 15 | A5B1015 | 13-15 | 1700 | 1445 | 1330 | 1650 | 2000 | 240 | 125 | |
| FAE 18 | A5B1018 | 16-18 | 1990 | 1735 | 1620 | 1650 | 2500 | 300 | 125 | |
| FAE 25 | A5B1025 | 21-25 | 2280 | 2025 | 1910 | 1650 | 3000 | 360 | 125 | |
| FAE 35 | A5B1035 | 30-36 | 1900 | 1605 | 1475 | 2270 | 4500 | 540 | 160 | |
| FAE 50 | A5B1050 | 42-50 | 2430 | 2130 | 2000 | 2270 | 6500 | 780 | 160 | |

# OIL WASTEWATER TREATMENT

## POLYETHYLENE GRAVITATIONAL OIL TRAPS FOR UNDERGROUND

**6 - 50**




Not for drinking water

Model for underground only

Handling by forklift

**Use:**
Treatment of yard water (e.g. car parks, car washing, etc.) and rainwater first flush. The gravitational oil trap, defined in Class II according to the Standard EN 858-1, acts as a sedimentation tank (clarifier) that separates gasoline, oils, grease and other light fractions of petroleum products which are highly polluting and are not biodegradable. They are installed in places such as parking areas, service stations, car washes etc. to avoid that, following a meteoric precipitation, the oily residue flows together in the drains or in the environment, thus polluting the territory.

**Operation:**
The oil removal process takes advantage of the principles of sedimentation by floating. Oil, grease and substances with a specific weight lower than the one of the water are separated in a sedimentation tank, floating to the surface, while all the solid particles with a specific weight higher than the one of the water are deposited on the bottom of the tank.
The oil traps are to be chosen according to the drainage surface, which can be covered (indoor car park) or outdoors (yard without roof), and to the maximum capacity of the drainage.

Max content of residual oil: 100 mg/l

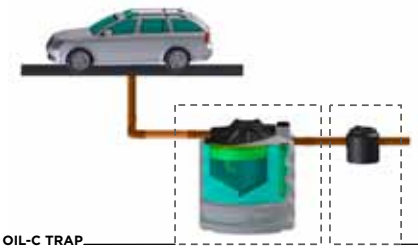
**WARRANTY: 2 YEARS**

**Maintenance:**
You are advised to inspect the ELBI gravitational oil traps every 6/8 months or according to the installation location (e.g. a car wash would need to be inspected more often than an indoor car park).
This avoids excess build-up of floating substances and sediment that can compromise the good functioning of the system.

**Specifications item:**
Gravitational oil trap manufactured in rotational polyethylene, in a single structure without joints, with reinforcing ribs, equipped with inlet and outlet pipes and lid for inspection and sampling.
Suitable for underground installation.

**Reference standards:**
Complies with standard EN 858-1
and Legislative Decree no. 152/2006.
CE pending

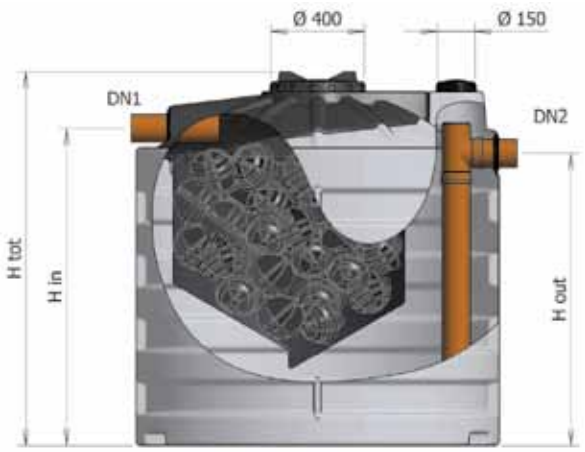
**Example of installation**




## DIMENSIONS

| MODEL | CODE | m² | m² | TOT mm | IN mm | OUT mm | mm | Lt/s | OIL LITRES | TOT LITRES | DN1/DN2 mm | NOTES |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| OIL 6 | A5R0006 | 875 | 315 | 1240 | 1030 | 935 | 1310 | 2,0 | 58 | 985 | 110 | |
| OIL 9 | A5R0009 | 1125 | 440 | 1500 | 1290 | 1195 | 1310 | 2,5 | 74 | 1295 | 110 | |
| OIL 12 | A5R0012 | 1560 | 560 | 1760 | 1550 | 1455 | 1310 | 3,5 | 105 | 1730 | 110 | |
| OIL 15 | A5R0015 | 1940 | 750 | 1700 | 1445 | 1330 | 1650 | 4,3 | 130 | 2150 | 125 | |
| OIL 18 | A5R0018 | 2375 | 940 | 1990 | 1735 | 1620 | 1650 | 5,2 | 160 | 2680 | 125 | |
| OIL 25 | A5R0025 | 3125 | 1250 | 2280 | 2025 | 1910 | 1650 | 7,0 | 205 | 3520 | 125 | |
| OIL 35 | A5R0035 | 4500 | 1820 | 1900 | 1605 | 1475 | 2270 | 10,0 | 300 | 5060 | 160 | |
| OIL 50 | A5R0050 | 6370 | 2500 | 2430 | 2130 | 2000 | 2270 | 14,0 | 420 | 7100 | 160 | |

# OIL-C WASTEWATER TREATMENT
## COALESCING OIL-WATER SEPARATORS




Not for drinking water

Model for underground only

Handling by forklift

**Use:**
Treatment of yard water (e.g. car parks, car washing, etc.) and rainwater first flush. The coalescing oil trap, defined in Class I according to the Standard EN 858-1, acts as a sedimentation tank (clarifier) that separates gasoline, oils, grease and other light fractions of petroleum products which are highly polluting and are not biodegradable. The coalescing plastic media contained inside the sedimentation tank improve the efficacy of the system.
They are installed in places such as parking areas, service stations, car washes etc. to avoid that, following a meteoric precipitation, the oily residue flows together in the drains or the environment, thus polluting the territory.

**Operation:**
The oil removal process takes advantage of the principles of sedimentation by the coalescence process. Coalescence is the process by which two or more droplets, bubbles or particles merge during contact to form a single daughter droplet, bubble or particle. When they collide, they coalesce to form larger droplets. When the droplets become too large, they begin to float to the surface, while all the solid particles with a specific weight higher than the one of the water are deposited on the bottom of the tank.
The oil traps are to be chosen according to the drainage surface, which can be covered (indoor car park) or outdoors (yard without roof), and to the maximum capacity of the drainage.

Max content of residual oil: 5 mg/l

**WARRANTY: 2 YEARS**

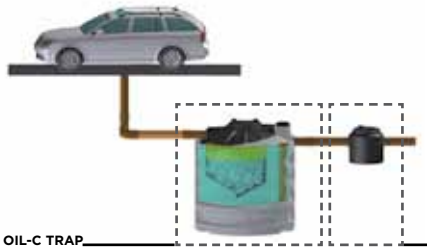
**Maintenance:**
You are advised to inspect the ELBI coalescing oil traps every 6/8 months or according to the installation location (e.g. a car wash would need to be inspected more often than an indoor car park). This avoids excess build-up of floating substances and sediment that can compromise the good functioning of the system.

**Specification item:**
Coalescing oil traps are realized in linear rotational polyethylene, in a single structure without joints, and equipped with inlet and outlet pipes, a sedimentation chamber, plastic media and lids for inspection and sampling.
Suitable for underground installation.

**Reference standards:**
Compliance with standard EN 858-1
and Legislative Decree no. 152/2006.
CE pending.

**SEE ACCESSORIES ON PAGE 240**

**Example of installation**




## DIMENSIONS

| MODEL | CODE | Covered Area [m²] | Open-air Area [m²] | TOT mm | IN mm | OUT mm | mm | Max Flow [lt/s] | Oil Volume [lt] | Total Volume [lt] | DN1/DN2 mm | NOTES |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| OIL-C 6 | A5R0C06 | 875 | 315 | 1240 | 1030 | 935 | 1310 | 2,0 | 58 | 985 | 110 | |
| OIL-C 9 | A5R0C09 | 1125 | 440 | 1500 | 1290 | 1195 | 1310 | 2,5 | 74 | 1295 | 110 | |
| OIL-C 12 | A5R0C12 | 1560 | 560 | 1760 | 1550 | 1455 | 1310 | 3,5 | 105 | 1730 | 110 | |
| OIL-C 15 | A5R0C15 | 1940 | 750 | 1700 | 1445 | 1330 | 1650 | 4,3 | 130 | 2150 | 125 | |
| OIL-C 18 | A5R0C18 | 2375 | 940 | 1990 | 1735 | 1620 | 1650 | 5,2 | 160 | 2680 | 125 | |
| OIL-C 25 | A5R0C25 | 3125 | 1250 | 2280 | 2025 | 1910 | 1650 | 7,0 | 205 | 3520 | 125 | |
| OIL-C 35 | A5R0C35 | 4500 | 1820 | 1900 | 1605 | 1475 | 2270 | 10,0 | 300 | 5060 | 160 | |
| OIL-C 50 | A5R0C50 | 6370 | 2500 | 2430 | 2130 | 2000 | 2270 | 14,0 | 420 | 7100 | 160 | |

## POPULATION EQUIVALENT (P.E.): DEFINITION

Domestic wastewater is composed of:

· **HYDRAULIC LOAD**: quantity of water in drainage wastewater;
· **ORGANIC LOAD**: quantity of organic substances contained in the sludge (mainly protein, carbohydrates and fat).
The ORGANIC LOAD is measured indirectly in $BOD_5$ (Biochemical Oxygen Demand):
the $BOD_5$ is a measurement of the quantity of oxygen ($O_2$) necessary so that bacteria can make the organic substances harmless within 5 days.
The unit of measurement of the $BOD_5$ is therefore $gBOD_5$/day (grams of $BOD_5$ per day = grams of $O_2$ per day).
According to Legislative Decree no. 152/2006, the daily quantity of biodegradable material produced by the Population Equivalent (P.E.) is "disposed of" with 60 grams of $O_2$; as a result the $BOD_5$ for a P.E. is 60 grams/day, $BOD_5$ = 60 g/(resident per day) of $O_2$.

Example

**1 P.E.** **$BOD_5$ = 1 x 60 g/(resident per day) of $O_2$ = 60 g/day of $O_2$**

**5 P.E.** **$BOD_5$ = 5x60 g/(resident per day) of $O_2$ = 300 g/day of $O_2$**

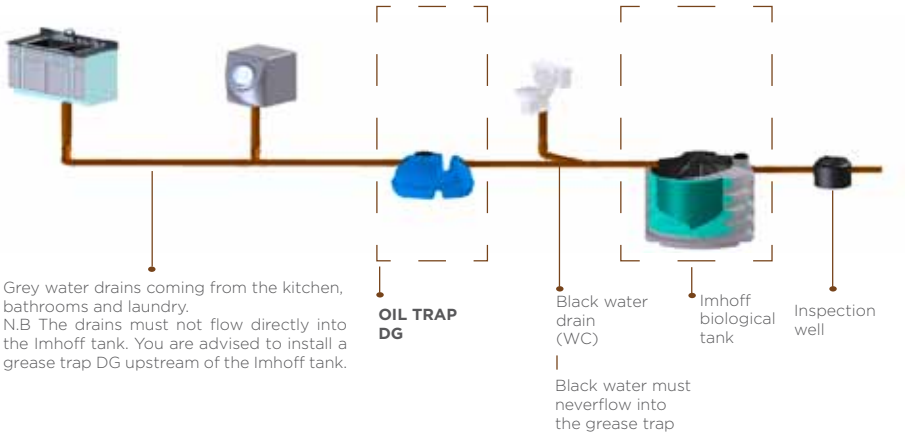
## SUGGESTIONS TO CALCULATE THE POPULATION EQUIVALENT

The table below shows the coefficients to be used, according to the type of utility, to determine the number of P.E. (Population Equivalent) and therefore to select the most suitable ELBI product.

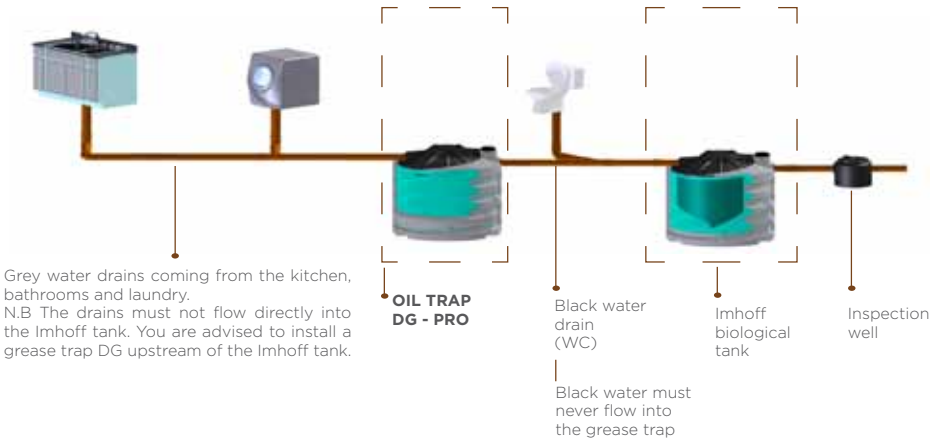
| TYPE OF UTILITY | NO. OF ... | MULTIPLICATION COEFFICIENT | P.E. |
|---|---|---|---|
| RESIDENTIAL (1) | Residents | 1.00 | |
| | $m^2$ residence | 0.03 | |
| | $m^3$ residence | 0.01 | |
| HOTELS, TOURIST FARMS, NURSING HOMES, CAMPSITES (2) | Beds | 0.50 | |
| | Employees | 0.33 | |
| RESTAURANTS, CANTEENS, INNS (2) | Covered | 0.33 | |
| | Employees | 0.33 | |
| CINEMAS, THEATRES, MUSEUMS (2) | Places | 0.03 | |
| | Employees | 0.33 | |
| BAR, CLUBS (2) | Customers | 0.14 | |
| | Employees | 0.33 | |
| HOSPITALS, CLINICS (2) | Beds | 0.50 | |
| | Employees | 0.33 | |
| SCHOOLS | Pupils | 0.10 | |
| GYMS | Attendees | 0.10 | |
| OFFICES, SHOPS, SHOPPING CENTRES | Employees | 0.33 | |
| COMPANIES THAT DO NOT PRODUCE WASTEWATER FROM PROCESSING | Employees | 0.50 | |
| POLICE STATIONS, PRISONS | Beds | 1.50 | |
| SERVICE STATIONS, MOTORWAY SERVICE STATIONS | Cars | 0.16 | |

(1) to determine the number of P.E. choose the greater among the three results
(2) to determine the number of P.E. add the two results

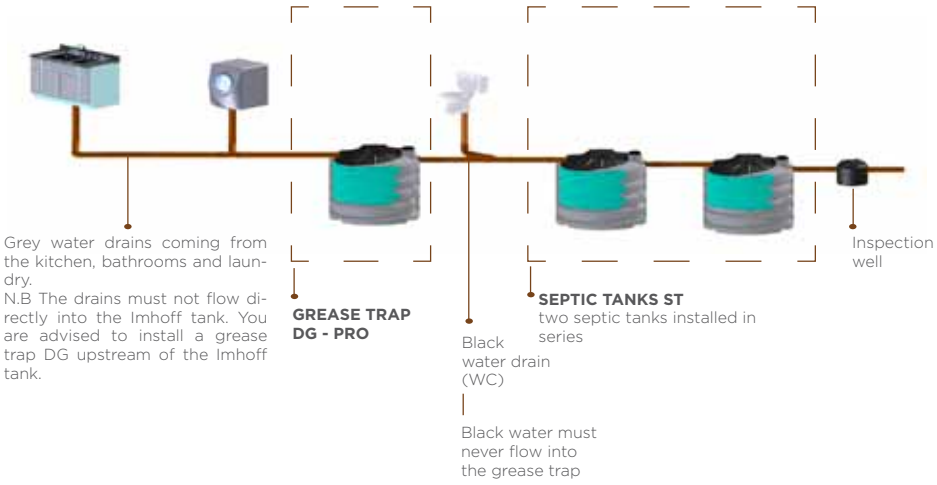
## GREASE TRAP DG + IMHOFF TANK



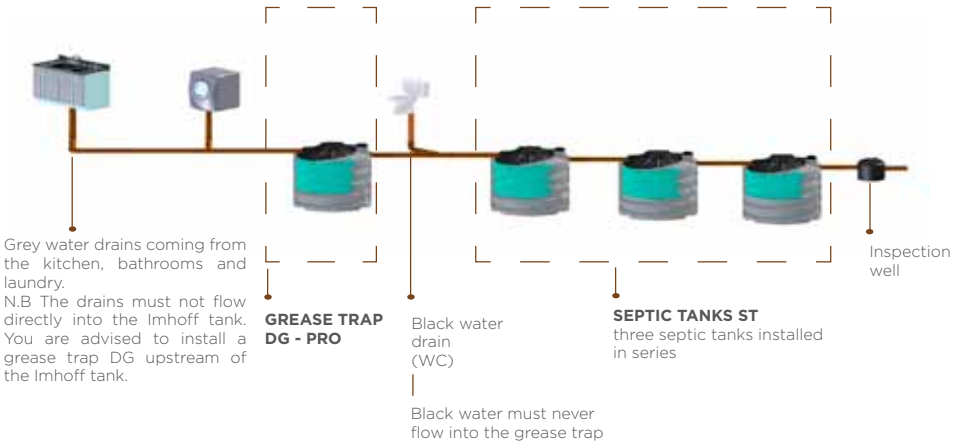

## OIL TRAP DG-PRO + IMHOFF TANK




## GREASE TRAP DG-PRO + DUAL CHAMBER SEPTIC TANKS ST




## GREASE TRAP DG-PRO + THREE CHAMBER SEPTIC TANKS ST



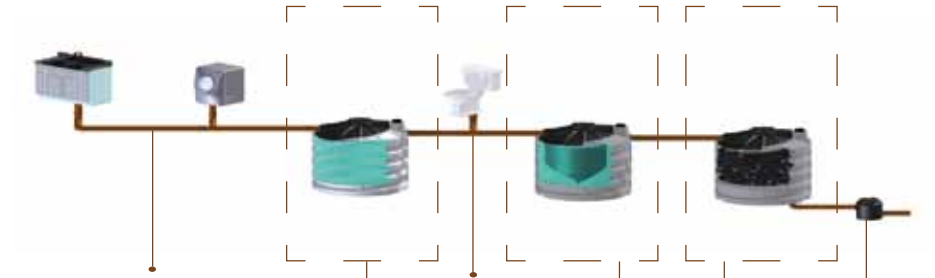

## EXAMPLES OF INSTALLATION

**Sand traps / Grease traps,**
**Septic tanks and Biological tanks:**

The standard outlines that, as a primary treatment of black water, IMHOFF biological tanks should be used; installation is permitted of septic tanks only where existing tanks are being replaced.

Some local administrations specify the installation of dual chamber or three-chamber septic tanks. Always consult your local authority on the matter of drainage of wastewater before installation.

## GREASE TRAP DG-PRO + IMHOFF TANK + FAE



Grey water drains coming from the kitchen, bathrooms and laundry.
N.B The drains must not flow directly into the Imhoff tank. You are advised to install a grease trap DG upstream of the Imhoff tank.

**OIL TRAP DG**

Black water drain (WC)

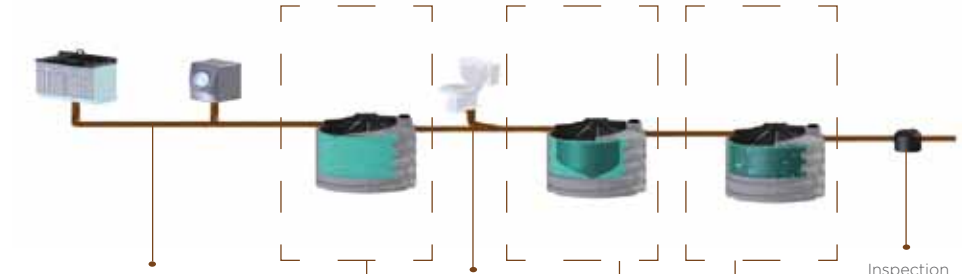
Black water must neverflow into the grease trap

Imhoff biological tank

**FAE**
AEROBIC PERCOLATING FILTER

Inspection well

## GREASE TRAP DG-PRO + IMHOFF TANK + FAN



Grey water drains coming from the kitchen, bathrooms and laundry.
N.B The drains must not flow directly into the Imhoff tank. You are advised to install a grease trap DG upstream of the Imhoff tank.

**OIL TRAP DG**

Black water drain (WC)

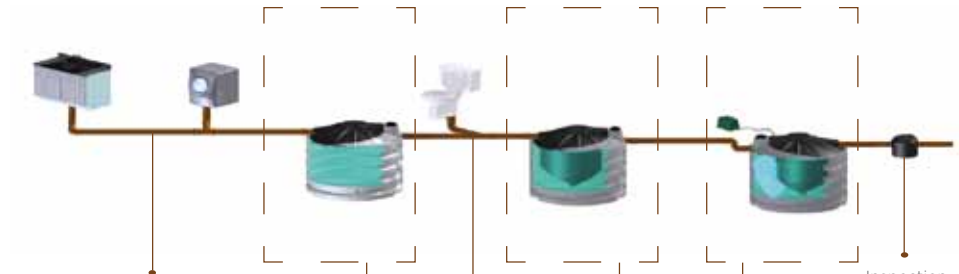
Black water must neverflow into the grease trap

Imhoff biological tank

**FAN**
ANAEROBIC PERCOLATING FILTER

Inspection well

## GREASE TRAP DG-PRO + IMHOFF TANK + FBC



Grey water drains coming from the kitchen, bathrooms and laundry.
N.B The drains must not flow directly into the Imhoff tank. You are advised to install a grease trap DG upstream of the Imhoff tank.

**OIL TRAP DG**

Black water drain (WC)

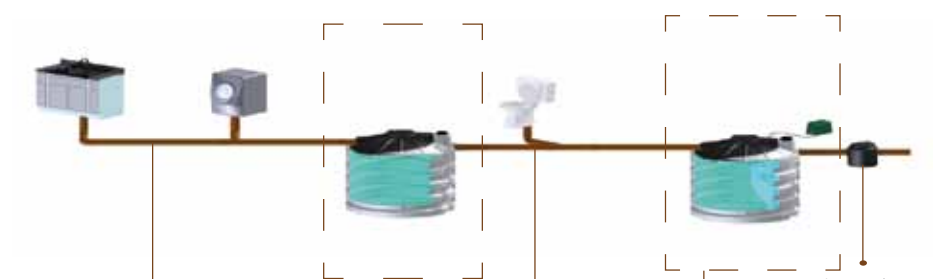
Black water must neverflow into the grease trap

Imhoff biological tank

**FBC**
LOW LOAD ACTIVATED SLUDGE

Inspection well

## GREASE TRAP DG-PRO + IMHOFF TANK + FOT



Grey water drains coming from the kitchen, bathrooms and laundry.
N.B The drains must not flow directly into the Imhoff tank. You are advised to install a grease trap DG upstream of the Imhoff tank.

**OIL TRAP DG**

Black water drain (WC)

Black water must neverflow into the grease trap

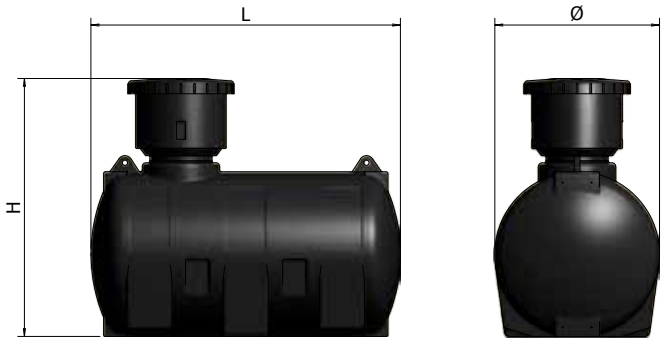
**FOT**
EXTENDED AERATION ACTIVATED SLUDGE SYSTEM

Inspection well

# CHU

## POLYETHYLENE TANKS FOR UNDERGROUND

**1000 - 2000**




For drinking water

Suitable to contain liquids other than water, in compliance with legislative standards

Model for underground only

Handling by forklift

**Extension provided**

For use with chemicals, see the table of tank chemical resistance (page 103).

ELBI guarantees the resistance of PLASTO tanks to liquids declared suitable (R) in the table of tank resistance.

**Maintenance of the characteristics of the liquids contained inside of PLASTO tanks should be checked by and is the responsibility of the user.**

**WARRANTY: 2 YEARS**

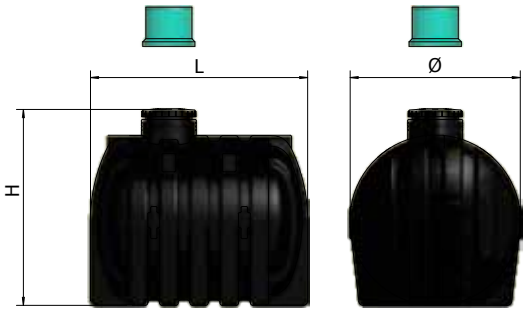
## DIMENSIONS

| MODEL | CODE | LITRES | mm | mm | mm | mm | NOTES |
|---|---|---|---|---|---|---|---|
| CHU-1000 | A590062 | 1000 | 915 | 1415 | 1720 | 300 | |
| CHU-2000 | A590070 | 2000 | 1300 | 1800 | 1700 | 400 | |

# CU

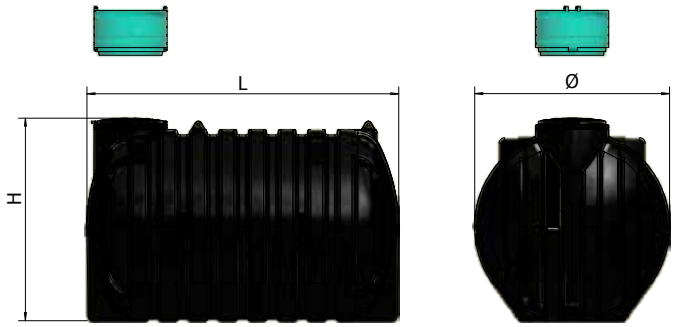
## POLYETHYLENE TANKS FOR UNDERGROUND

### 3.000 - 5.000




CU 3000 - 5000

### 10.000




CU 10000

For drinking water

Suitable to contain liquids other than water, in compliance with legislative standards

Model for underground only

Handling by forklift

**Extension on request**

**WARRANTY: 2 YEARS**

For use with chemicals, see the table of tank chemical resistance (page 103).

ELBI guarantees the resistance of PLASTO tanks to liquids declared suitable (R) in the table of tank resistance.

**Maintenance of the characteristics of the liquids contained inside of PLASTO tanks should be checked by and is the responsibility of the user.**

| ARTICLE | CODE | mm | mm |
|---|---|---|---|
| EXTENSION for CU 3-5.000 | 7081200 | 430 | 500 |
| EXTENSION for CU 10.000 | A5G0092 | 450 | 700 |

**See details on page 239**

## DIMENSIONS

| MODEL | CODE | LITRES | mm | mm | mm | mm | NOTES |
|---|---|---|---|---|---|---|---|
| CU- 3000 | 1720551 | 3000 | 1585 | 1870 | 1920 | 500 | |
| CU- 5000 | 1720557 | 5000 | 1860 | 2150 | 2380 | 500 | |
| CU-10000 (•) | 1720563 | 10000 | 2130 | 2225 | 3410 | 700 | |

**(•) Tanks exclusively produced in the factory in Limena (PD).**

# RAINWATER RECOVERY SYSTEMS

## Water: a precious resource

Over 97% of the total 1.4 million of km$^3$ of water on Earth is **seawater, which cannot be used for human consumption**. The remaining 3% of the freshwater is mostly composed of ice (concentrated at the Poles).

*The* **available** *part for human consumption is only* **0.3%***; this percentage is progressively reducing due both to the polluting substances being drained into water and to the irregular rainfall, always less frequent and often dangerously overabundant, which do not enable an adequate supply by the water main.*

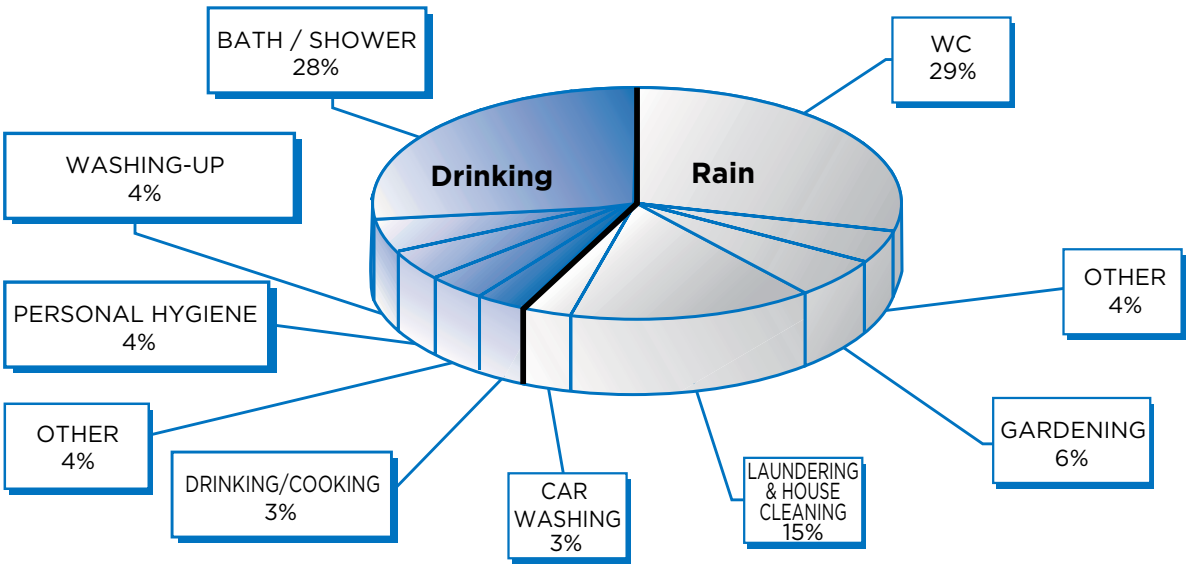
## Why should rainwater be recovered?

The use of rainwater is therefore a precious contribution to reducing waste of drinking water. It encourages more careful consumption and awareness and leads to considerable cost savings (up to 50%).

The rainwater is particularly indicated in the following uses:

- for the **washing machine** and **household cleaning**: rainwater does not stimulate the formation of lime scale; the use of rainwater reduces consumption of lime scale removers and, thanks to its best cleaning action, also reduces use of detergents (about 50%):
- for **gardening**: rainwater used to water plants and flowers stimulates optimal absorption of minerals;
- for the **wc**: rainwater does not stimulate the formation of lime scale.

### Pro-capita consumption of drinking water in domestic use




**Over half the daily domestic consumption of drinking water can be replaced with rainwater.**

# SIZING THE TANK

To properly calculate the size of the underground tank, use the following information:

## RAIN WATER YIELD (R)

**Projected roof surface (S)**

The projected roof surface is equal to the building's base, regardless of the shape and roof inclination.

**Precipitation values (Vp)**

Local precipitation value indicates the annual rain quantity. Such information is usually available from the local authority orat the nearest meteorological station. (average: 1.000 l/m$^2$)

**Roof cover value (Vt)**

| Roof manufacturing material | Value |
|---|---|
| Tiles in clay, terracotta and glazed | 0,9 |
| Roof in cement or slate | 0,8 |
| Flat roofs with gravel | 0,6 |
| Green roofs | 0,4 |

**R = S** (m$^2$) **x Vp** (litres/m$^2$) **x Vt**

## WATER REQUIREMENT (FI)

| Utility | Per year average requirement | | No. | | WATER REQUIREMENT (FI) |
|---|---|---|---|---|---|
| WC | 9.000 litres | x | ..... person | = | + |
| Washing machine | 5.000 litres | x | ..... person | = | + |
| Home cleaning | 1.000 litres | x | ..... person | = | + |
| Gardening | 450 litres/m$^2$ | x | ..... person | = | + |
| Other | | | | | = |
| | | | **TOTAL FI** | | **Litres** |

**Values to consider for big systems:**

- School = 1000 l/person
- Office = 1500 l/person

The calculation factor **(FC)** is the smallest value between the rainwater yield **(R)** and the water requirement **(Fi)**.

The constant (K) is 0.0625.

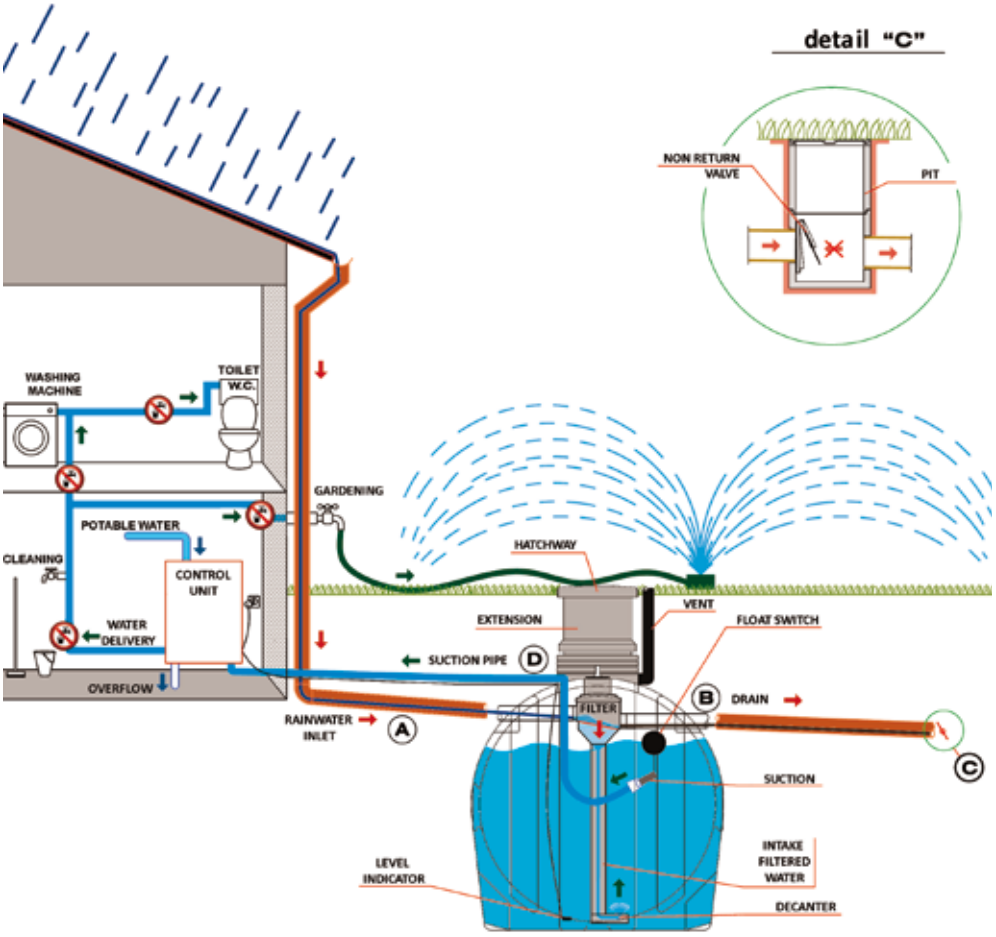
The minimum volume of the tank **(V)** then will be:

**V = FC** (litres) **x K**

Before installing the rainwater recovery system, we recommend you to contact the local council or local authority to find out the local standards in force (where present) concerning the treatment of rainwater for domestic use (use of debacterising systems, rainwater separation from drinking water, etc.).

# DIAGRAM OF SYSTEM WITH “S” OR “F” CONTROL UNIT

**Operation:**




The system has the purpose of recovering rainwater to use it again for certain household utilities (WC, washing machine, irrigation, cleaning, etc.). It is composed of an underground tank, a filtering system and a control unit. The water is collected by gutters and, via a pipe, transferred towards the filter inside the tank. The filter is located in a tilted position so that the filtered residue is brought towards the drainage pipe.

The filter is used to separate the water from the dirt and to direct the water inside of the tank by means of a pipe (clarifier terminal) whose end part is turned upwards to avoid creating turbulence and not to remove any stored sediment lying on the bottom of the tank.

The water intake occurs at 15 cm under the water level using a flexible pipe with a float inside the tank to take out the purest water. A control unit composed of an electric box and a built-in pump controls the entire system from inside the home.

The control unit also has the task of controlling the inflow of drinking water when the rainwater reserve in the tank is used up.

**A natural balance**

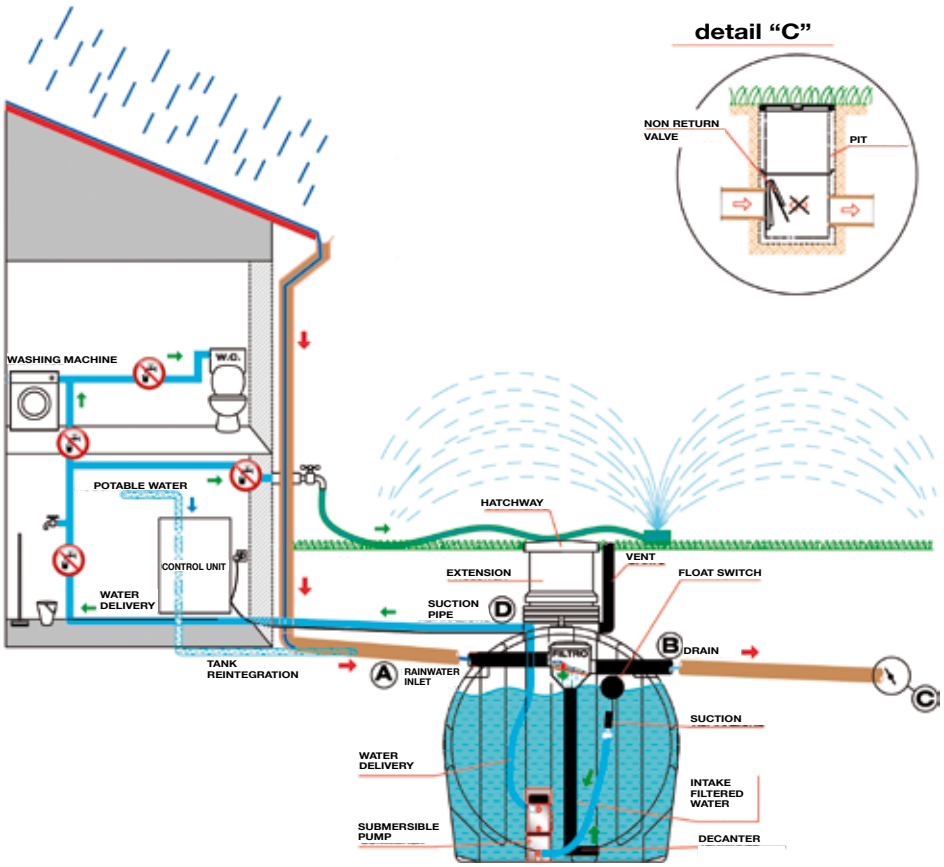
- Oxygenated environment
- Cool temperature
- No light

These are the three conditions necessary for the good functioning of the rainwater collection system.

Inside the underground tank the temperature is kept cool and free of sudden temperature changes. The oxygen present encourages the proliferation of “good” bacteria that mineralise the sediment on the bottom of the tank, keeping the water purer. The absence of light also serves to avoid algae formation, contributing to keeping a natural balance inside the tank.

# DIAGRAM OF SYSTEM WITH “PX” MODULE WITH SUBMERSIBLE PUMP

## Operation:




The PX module manages and distributes rainwater using a submersible pump.

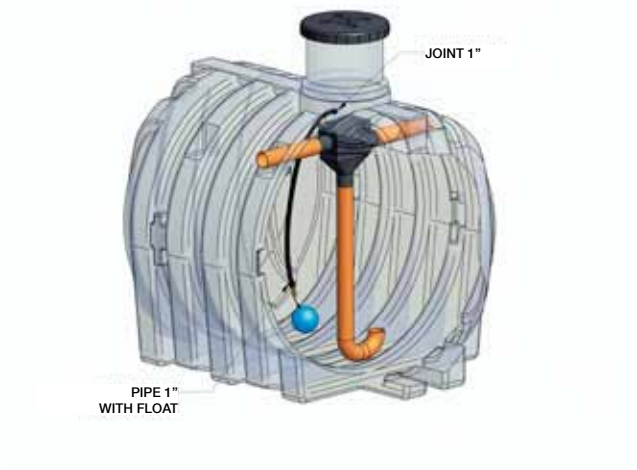
The Kit is composed of a submersible pump and a drinking water integration system.

The main purpose of the PX control unit is to give priority to rainwater consumption.

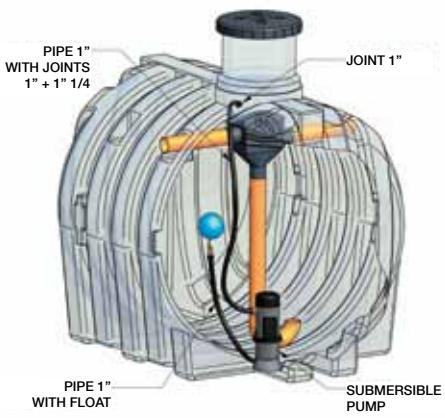
When the rainwater contained in the collection tank is insufficient, the control unit switches to the water mains supply, thereby ensuring a continuous inflow of water to the intake points. The rupture unit included in the PX model prevents any possible contamination in the tank to come into contact with the water mains.

## Examples of connection to the rain basic system:

### RAIN BASIC

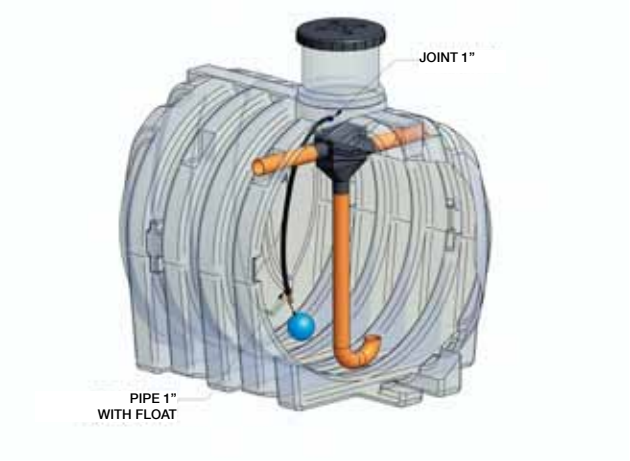



### RAIN BASIC with submersible pump



# RAIN SYSTEM

## RAINWATER RECOVERY SYSTEMS




Not for drinking water

For underground use only

Handling by forklift

**Maintenance of the characteristics of the liquids contained inside of PLASTO tanks should be checked by and is the responsibility of the user.**

**WARRANTY: 2 YEARS**

## INFORMATION DATA

| MODEL | CODE | | NOTES |
|---|---|---|---|
| RAIN BASIC CU 3.000-B (•) | A520074 V0000 | PRE-FITTED TANK* | |
| RAIN BASIC CU 5.000-B (•) | A520080 V0000 | PRE-FITTED TANK* | |
| RAIN BASIC CU 10.000-B (•) | A520092 V0000 | PRE-FITTED TANK* | |

**(•) Tanks exclusively produced in the factory in Limena (PD).**

* Standard supply of the pre-fitted tank:
Extension; filter, intake pipe with float; clarifier terminal; arrangement for plumbing connections.
The control unit and the electrical connections should be bought separately and connected on installation.
The standard supply excludes plumbing material (pipes, joints, silicone, etc.), various accessories, electrical connections, masonry and excavation work, installation and any other details not clearly stated.

N.B.: The useful capacity of the pre-fitted tanks is reduced by approximately 15% for the models CU 3.000 and CU 5.000, and by 10% for the model CU 10.000.

**CONTROL UNIT:**

| MODEL | CODE | NOTES |
|---|---|---|
| CONTROL UNIT MOD. “S” | L3A0000 | |
| CONTROL UNIT MOD. “F” | L3A0010 | |
| KIT UNIT MOD. “PX” ** | L3A0020 | |

** WITH STAINLESS STEEL SUBMERSIBLE PUMP, SAFETY DEVICE, INTAKE PIPE (L. 2.5; ø1”), CABLE GLAND M16.

## IMPORTANT NOTES

Remember that:

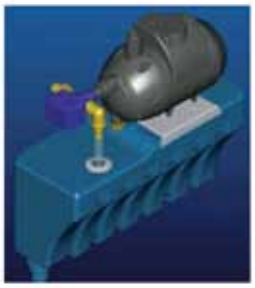
- Before proceeding with installation of the rainwater collection system, you must assess the hydro-geological and morphological features of the ground;
- It is necessary to carefully read the installation instructions supplied with the system;
- Installation must be carried out as state-of-the-art by a specialist technician;
- A correct installation procedure, together with regular cleaning of the filter, is fundamental for a good and long-lasting working system.
- The water supplied from the utilities connected to the rainwater recovery system is not drinkable.
- For underground installation, follow the instructions on page 100.

## MODULES AND CONTROL UNITS FOR "RAIN BASIC" SYSTEMS

**Management and control systems**

The command unit controls and manages the entire system, guaranteeing continuous operation in total safety.
You can choose between three different management and distribution systems of the rainwater: the S basic model, the F advanced model and the PX model with a submersible pump in stainless steel.

### MODEL "F" and "S" CONTROL UNIT with self-priming pump



| CONTROL UNIT | CODE | Vacuum weight (kg) | Weight in operation (kg) | Height | Width | Depth |
|---|---|---|---|---|---|---|
| S | L3A0000 | 18 | 33 | 718 | 650 | 260 |
| F | L3A0010 | 20 | 35 | 850 | 750 | 290 |

***Warning:*** the control unit must be installed inside the home, in an enclosed, sheltered and dry place.
CONTROL UNITS COMPLY WITH EUROPEAN STANDARD EN 1717

### "PX" SUBMERSIBLE PUMP UNIT

| Module | CODE | Panel height | Panel width | Panel depth |
|---|---|---|---|---|
| PX | L3A0020 | 718 | 650 | 260 |

The PX unit is composed of a stainless steel submersible pump, a safety device, an intake pipe (L. 2.5 m; ø 1") and a cable gland M16.

## GENERAL DESCRIPTION OF THE RAIN SYSTEM

The management and distribution system of the rainwater is controlled by a control unit. The main scope of this control unit is to give priority to rainwater consumption rather than mains water. Generally, the system is delimited to an irrigation system, washing machine, toilet flush tank and floor washing (N.B. The water supplied by the system is never drinkable).
The control unit controls the inflow of drinking water even if you want to use mains water instead of rainwater. The two independent water reserves (rainwater and mains water) ensure the regular working of the system. This switch can take place via a manual command, or automatically (using a level indicator for the accumulated rainwater) if the tank does not contain a sufficient rain water reserve.
The control unit is equipped with "open drainage" in compliance with the standard EN 1717, and with a safety device that prevents any possible contaminants in the tank to come in contact with the water mains.

### Basic characteristics of the control units (Models "S" and "F"):

• The control units work with an automatic electronic device and are equipped with an external, multi-stage, self-priming, centrifugal pump.
• The control units are also equipped with an automatic system to switch to the intake of drinking water if the rainwater reserve tank is empty; if needed, this operation can take place manually.

### Additional characteristics of the Model "F" control unit:

The "F" model control unit, in addition to the characteristics of the "S" model, is equipped with a micro-processor with the additional features:
• signals any anomalies in the system via acoustic and optical indicator;
• indicates the level (expressed as a percentage) of the water collected inside the underground tank;
• periodically replaces the water collection inside the small tank of the control unit to avoid standing water in the drinking water supply pipes;
• allows installation of an additional submersible pump.

### Characteristics of the "PX" module:

System equipped with a submersible pump in stainless steel and a safety device.

## CONTROL UNIT TECHNICAL DATA

| Performance | MOD. "S" | MOD. "F" | MOD. "PX" |
|---|---|---|---|
| Max. capacity | 85 l/min | 85 l/min | 60 l/min |
| Max. head H | 45 m | 48 m | 51 m |
| Temperature of pumped liquid | From +5°C a +35°C | From +5°C a +35°C | From +5°C a +35°C |
| Maximum pressure of the system | 6 bar | 6 bar | N.A. |
| Mains maximum pressure | 4 bar | 4 bar | N.A. |
| Minimum mains capacity | 10 l/min | 10 l/min | N.A. |
| Maximum height of the highest use point | 15 m | 12 m | 10 m |
| Power supply voltage | Volt 230 Hz50 | Volt 230 Hz50 | Volt 230 Hz50 |
| Max. absorbed power | 1000 W | 1000 W | 1000 W |
| Room temperature | Min +5°C Max +40°C | Min +5°C Max +40°C | Min +5°C Max +40°C |
| Dimensions of water mains pipe | 3/4" | 3/4" | 3/4" |
| Dimensions of delivery pipe | 1" | 1" | 1" |
| Dimensions of intake pipe | 1" | 1" | 1" |
| Overflow dimensions | DN 50 | DN 50 | N.A. |
| Max. installation altitude | N.A. | 1000 m | N.A. |
| Water type | 4 – 9 ph | 4 – 9 ph | 4 – 9 ph |
| Level sensor | float switch ON/OFF with 20 metres of cable | float switch ON/OFF with 20 metres of cable + electronic transducer with 20 metres of cable | N.A. |

N.A.: Not Applicable
Elbi reserves the right to make changes without prior notification.
All measures are subject to use tolerance. The data outlined are approximate.

## ORDINARY MAINTENANCE INSTRUCTIONS FOR RAINWATER RECOVERY SYSTEMS

- Regularly clean the filter positioned inside the tank, as follows:

  • Open the inspection opening of the tank and lift the small stainless steel mesh, paying attention not to tip the residue into the tank;
  • Rinse the small mesh under flowing water to clean off any impurities;
  • Re-insert the small mesh into the specific compartment and close the opening again.

- Regularly check the opacity and odour of the rainwater stored in the tank.
- Regularly clean inside the tank every 5 – 10 years (as needed).
- Periodically check the seal and tightness of all connections.

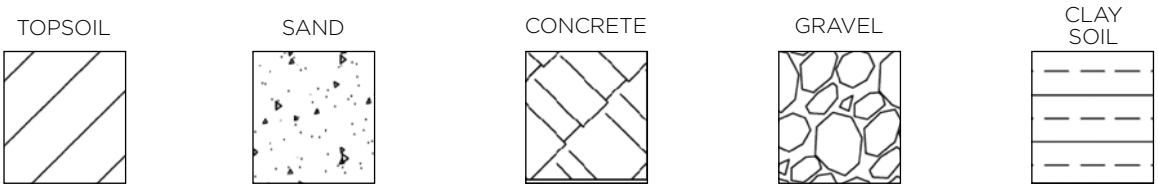
**Warning:**

• It is strictly forbidden to use the rainwater collection system for purposes other than originally intended.
• The water supplied by the utilities connected to the rainwater recovery system is not drinkable.
• In case of malfunctioning of the system or a control unit anomaly, switch-off the system and contact the installer.
• In case of a black-out or temporary suspension in the electric power supply, the control unit will not work.
If necessary, connect the control unit to a UPS device or create a bypass to take drinking water directly from the aqueduct without passing through the control unit.
• Before proceeding with installation of the rainwater collection system, you must assess the hydro-geological and morphological characteristics of the soil.
• You must carefully read all the installation instructions supplied with the system.
• Installation must be carried out as state-of-the-art by a specialist technician.
• A correct installation procedure, together with regular filter cleaning, is fundamental for a good and long-lasting working system.

## INSTALLATION AND MAINTENANCE NOTES FOR ALL PLASTO LINE TANKS

· Firstly check the integrity of the tank and the seal on the joints; send notification of any defects found.
· During the downloading and movement phases, pay attention not to bump the tank with hard or sharp parts.
· Movement must only be carried out with the tank completely empty; it is strictly forbidden to lift the tank using the inlet or outlet pipes.
· Position the tank perfectly plan on a levelled structure without any roughness, and resistant to the weight of the full tank.
· Before installation, ensure no heat source is placed near the tank.
· It is forbidden to build parts in masonry work that prejudices any maintenance or replacement of the tank itself.
· Ensure an adequate drainage system to avoid flooding in the event of rupture or leaking from the tank.
· Ensure you blind the overflow hole (taking care not to block its regular functioning) to avoid light passage that would enable formation of algae and micro-organisms.
· Periodically clean inside the tank, as planned by current legislation in force.
· Plasto tanks are created with special resins that guarantee resistance to U.V. rays; therefore, if installed as state-of-the-art, even if exposed to sun rays, the Plasto tanks are not subject to algae formation.
· If the tanks are underground (*) as first water tanks, ensure the overflow pipe can freely flow, is linear and is as short as possible.
· *Elbi reserves the right to supply water seals only. If different liquids are being used, the customer should personally install suitable seals for the type of liquid contained in the tank.*
(*) Tanks for underground only.

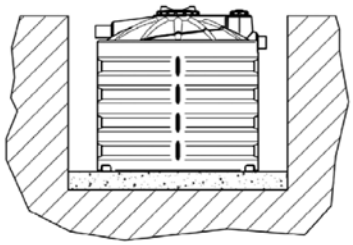
**Keyword of materials for filling and / or laying underground**




For the choice of filling material and for the compacting method, refer to the European standards ENV 1046 and EN 1610.

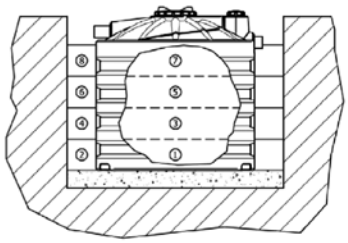
**REQUIREMENTS:**

**Verify and make a preliminary evaluation of the hydrogeological and morphological characteristics of the soil for the compatibility to lay underground the tank.**
**If, during the excavation, the aquifer is higher than the bottom of the tank, it is necessary to provide a suitable insulation.**
**The tank must not be buried in sloping areas, and the surrounding land must not generate unbalanced lateral forces.**



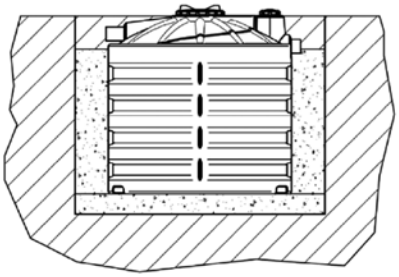
**1. PREPARATION OF THE EXCAVATION**

Prepare an adequately sized pit, so that a space of at least 30 cm is left around the tank (in the presence of clay soil, the distance must be at least 50 cm) The excavation site must be dug at least 1 m from any buildings. Lay on the bottom of the pit a layer of sand of at least 15 cm so that the tank rests on a flat and uniform base without any roughness. Proceed with the position of the tank which must be completely empty.



**2. STANDARD BUILDING AND FILLING**

Proceed to fill the excavation site in subsequent layers of 15 – 20 cm at a time, filling firstly the tank with water and then the pit with compacted sand. Comply with the diagram sequence: 1 Water – 2 Sand – 3 Water – 4 Sand etc.

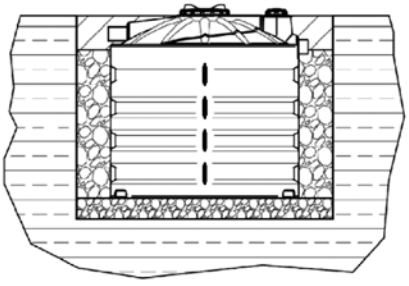


**3. STANDARD LAYING UNDERGROUND**

Having filled the tank with water and supported it with sand, cover the tank with topsoil, leaving the inspection openings free. With the underground laying method, the area becomes walkable and passage of the vehicles is forbidden at a distance of less than 2 m from the excavation site.

**VENT**

Bring the vent pipe over the highest point of the building or however far from the home to avoid formation of bad odours.



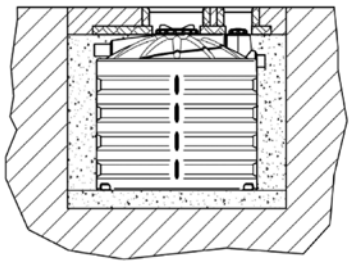
**4. LAYING WITH CLAY SOIL**

Prepare an adequately sized pit, so that a space of at least 50 cm is left around the tank. Lay on the bottom of the pit a layer of gravel (diameter of gravel about 10 mm) of at least 15 cm so that the tank rests on a flat and uniform base without any roughness. Proceed with the position of the tank which must be completely empty. Fill the excavation site with subsequent layers of 15 – 20 cm at a time. Fill firstly the tank with water and then the pit with gravel (diameter of circa 20-30 mm); for this phase comply with the procedure in point 2 with layer filling. You are advised to install a drainage system on the bottom of the excavation site.

**VENT**

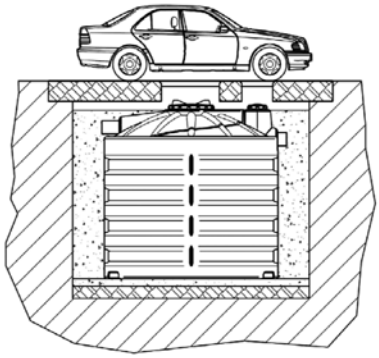
Bring the vent pipe over the highest point of the building or however far from the home to avoid formation of bad odours.

## 5. CONSTRUCTIONS OF WELLS



For the installation of wells or manholes weighing over 50 kg you must create a slab in concrete so that the weight is distributed over the entire tank. It is forbidden to have masonry parts that prejudice maintenance or a possible replacement of the tank.

## 6. LAYING UNDERGROUND – LIGHT DRIVEWAY

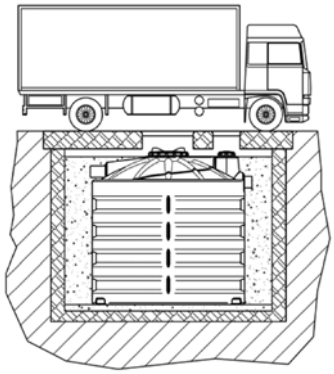


For **LIGHT DRIVEWAY** we intend a **maximum weight** applied of **12.5 tons** (**Class B125 according to EN 124/95**).

In order that ELBI tanks for underground can be installed in driveway zones according to class B125, you must build a **self-supporting slab** in reinforced cement. The slab should be bigger than the excavation site in order to avoid the weight overloading on the tank. Furthermore, between the slab and the tank there must be at least 10 cm of air. You are advised to build a concrete slab also under the tank, and then to lay a 10 cm bed of sand. Both the slabs should be sized by a qualified professional.

Concerning the laying underground the tank, refer to the previously described points 1, 2 and 3.

## 7. LAYING UNDERGROUND – HEAVY DRIVEWAY

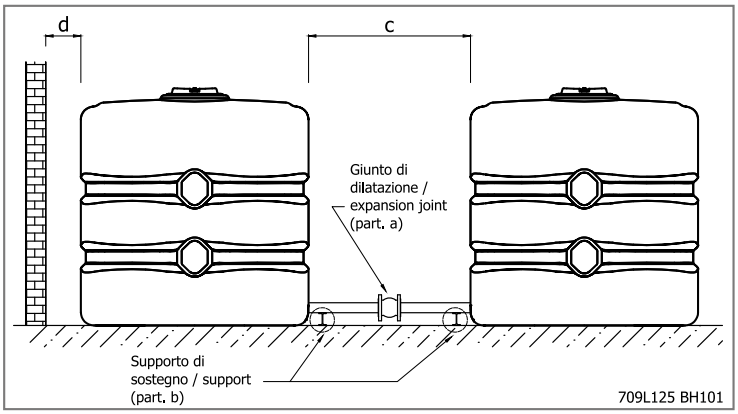


For **HEAVY DRIVEWAY** we intend a **maximum weight** applied of **40.0 tons (Class B400 according to EN 124/95).**

In order that ELBI tanks for underground can be installed in driveway zones according to class B400, you must build a **reinforced concrete formwork** and a **self-supporting slab in reinforced cement**. The slab should be bigger than the excavation site in order to avoid the weight overloading on the tank, and make sure that the weight discharges on the formwork. Furthermore, between the slab and the tank there must be at least 10 cm of air. You are advised to lay under the tank a 10 cm bed of sand. Both the formwork and the slab should be sized by a qualified professional.

Concerning the laying underground the tank, refer to the previously described points 1, 2 and 3.






Example of installation

1. Connect the tanks only with flexible piping;
2. Install a expansion joint (detail a) on the connection pipes;
3. Plan supports (detail b) for the piping;
4. If joints, shut-off valves, etc. are installed, they must not constrain the piping;
5. Install the tanks keeping an adequate distance (dimension c) to enable free dilation during their filling phase;
6. If the tanks are installed near a wall structure, keep an adequate distance (dimension d) to enable free dilation of the tank during the filling phase.

## WARRANTY CONDITIONS FOR THE PLASTO LINE TANKS

If installed according to the ELBI installation standards, the polyethylene tanks are guaranteed against the formation of any type of algae growth. The warranty is valid for 2 years against manufacturing defects and against any deterioration not attributable to external causes. The warranty runs from the delivery date on the accompanying bill of lading.

**The warranty does not cover:**

- installation costs
- damage for non-use
- damage to third parties
- damage resulting from leaking contents
- transport costs
- any use with liquids other than drinking water or rainwater, for tanks of CU, CHU series and rainwater recovery systems.
- any use with liquids not compliant with the table of tank chemical resistance.

**Warnings**

The tanks for underground must be installed underground only; all the other PLASTO tanks are for above ground use only.

If you want to lay a tank underground that is not suitable for the purpose, the warranty becomes void.

You are recommended to plan for an adequate drainage system to avoid flooding in case of rupture or leaks from the tank.

## "MIGRATION TEST" CERTIFICATES

**Suitability to contain drinking water**

| PRODUCT | °C 23° | 60° | PRODUCT | °C 23° | 60° | PRODUCT | °C 23° | 60° | PRODUCT | °C 23° | 60° |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Acetic acid (10%) | R | R | Chloroform | LR | NR | Iron nitrate (ico) | R | R | Sodium benzoate (35%) | R | R |
| Acetic acid (50%) | R | LR | Chlorosulphonic acid (100%) | NR | NR | Iron sulphate (oso) | R | R | Sodium bicarbonate | R | R |
| Acetic aldehyde | LR | NR | Cider | R | R | Lead acetate | R | R | Sodium borate | R | R |
| Acetic anhydride | NR | NR | Citric acid (sat.) | R | R | Lead nitrate | R | R | Sodium bromide | R | R |
| Air | R | R | Coffee | R | R | Liquid chlorine | NR | NR | Sodium carbonate | R | R |
| Alcohol butilico | R | R | Cola concentrates | R | R | Liquids to develop photographs | R | R | Sodium chlorate | R | R |
| Alcohol from coconut oil | R | R | Copper chloride (sat.) | R | R | Lye (10%) | R | R | Sodium chloride | R | R |
| Alcool amilico | R | R | Copper cyanide (sat.) | R | R | Magnesium carbonate | R | R | Sodium cyanide | R | R |
| Alum (all types) | R | R | Copper fluoride (2%) | R | R | Magnesium chloride | R | R | Sodium dichromate | R | R |
| Aluminium chloride (all conc.) | R | R | Copper nitrate (sat.) | R | R | Magnesium hydroxide | R | R | Sodium disulphate | R | R |
| Aluminium fluoride (all conc.) | R | R | Copper sulphate (sat.) | R | R | Magnesium nitrate | R | R | Sodium disulphite | R | R |
| Aluminium sulphate (all conc.) | R | R | Corn oil | R | R | Magnesium sulphate | R | R | Sodium ferrocyanide | R | R |
| Amm. persulphate (sat. sol.) | R | R | Cotton oil | R | R | Mercury | R | R | Sodium fluoride | R | R |
| Ammonia (100% gas) | R | R | Dextrin | R | R | Methyl alcohol (100%) | R | R | Sodium hydroxide | R | R |
| Ammonium carbonate | R | R | Dextrose | R | R | Methylene chloride (100%) | LR | NR | Sodium hypochlorite | R | R |
| Ammonium chloride (sat. sol.) | R | R | Dextrose (sat. water sol.) | R | R | Milk | R | R | Sodium nitrate | R | R |
| Ammonium fluoride (sat. sol.) | R | R | Diazonium salts | R | R | Mineral oils | R | LR | Sodium phosphate (tri) | R | R |
| Ammonium hydrate (10%) | R | R | Dibutyl phthalate | LR | LR | Naphtha | LR | NR | Sodium sulphate | R | R |
| Ammonium hydrate (30%) | R | R | Dichlorobenzene (ortho and para) | NR | NR | Naphthalene | NR | NR | Sodium sulphide | R | R |
| Ammonium nitrate (sat. sol.) | R | R | Diesel for domestic use | LR | LR | n-Heptane | LR | LR | Sodium sulphite | R | R |
| Ammonium sulphate (sat. sol.) | R | R | Diesel for motor vehicles | LR | LR | Nickel chloride | R | R | Solutions for brass plating | R | R |
| Amyl acetate | NR | NR | Diethyl chetone | LR | LR | Nickel nitrate | R | R | Solutions for cadmium plating | R | R |
| Amyl chloride | NR | NR | Diethylene glycol | R | R | Nickel sulphate | R | R | Solutions for copper plating | R | R |
| Aniline | NR | NR | Diglycolic acid | R | R | Nicotine (diluted) | R | R | Solutions for gold plating | R | R |
| Aqua-regia | NR | NR | Dimethylamine | NR | NR | Nitric acid (30%) | R | R | Solutions for lead plating | R | R |
| Aromatic hydrocarbons | NR | NR | Disodium phosphate | R | R | Nitric acid (50%) | R | LR | Solutions for nickel plating | R | R |
| Arsenic acid (all conc.) | R | R | Emulsifiers for photography | R | R | Nitric acid (70%) | R | LR | Solutions for photography | R | R |
| Ascorbic acid (10%) | R | R | Ethane dichloride | NR | NR | Nitric acid (95%) | NR | NR | Solutions for silver plating | R | R |
| Barium carbonate (sat. sol.) | R | R | Ethyl acetate | LR | NR | Nitrobenzene | NR | NR | Solutions for tin plating | R | R |
| Barium chloride (sat. sol.) | R | R | Ethyl alcohol | R | R | n-Octane | R | R | Solutions for zinc plating | R | R |
| Barium hydrate | R | R | Ethyl alcohol (35%) | R | R | Olive oil | R | NR | Starch (saturated solution) | R | R |
| Barium sulphate (sat. sol.) | R | R | Ethyl benzene | NR | NR | Oxalic acid | R | R | Stearic acid | R | R |
| Barium sulphide (sat. sol.) | R | R | Ethyl chloride | NR | NR | Perchloroethylene | NR | NR | Sulphorous acid | R | R |
| Beer | R | R | Ethyl ether | NR | NR | Petrol | NR | NR | Sulphuric acid (100%) | R | R |
| Benzene | NR | NR | Ethylene glycol | R | R | Potassium bicarbonate | R | R | Sulphuric acid (50%) | R | R |
| Benzoic acid (all conc.) | R | R | Ethylene trichloride | NR | NR | Potassium bromide | R | R | Sulphuric acid (70%) | R | LR |
| Bismuth carbonate (sat. sol.) | R | R | Fluoboric acid | R | R | Potassium carbonate | R | R | Sulphuric acid (80%) | R | NR |
| Borax | R | R | Fluosilicic acid | R | LR | Potassium chlorate | R | R | Sulphuric acid (96%) | LR | NR |
| Boric acid (all conc.) | R | R | Fluosilicic acid (30%) | R | R | Potassium chloride | R | R | Sulphuric acid (98%) | LR | NR |
| Boron tetrafluoride | R | R | Formic acid (all conc.) | R | R | Potassium chromate (40%) | R | R | Sulphuric acid (smoking) | NR | NR |
| Brine | R | R | Fructose | R | R | Potassium cyanide | R | R | Synthetic detergents | R | R |
| Bromium (liquid) | NR | NR | Fruit pulp | R | R | Potassium dichromate (40%) | R | R | Tannico acid | R | R |
| Butanediol (10 %) | R | R | Furfurolo | NR | NR | Potassium ferrocyanide II | R | R | Tetrahydrofuran | LR | NR |
| Butanediol (100%) | R | R | Furfuryl alcohol | LR | LR | Potassium ferrocyanide III | R | R | Tin chloride (ico) | R | R |
| Butanediol (50%) | R | R | Gallic acid | R | R | Potassium fluoride | R | R | Tin chloride (oso) | R | R |
| Butyl acetate | NR | NR | Glucose | R | R | Potassium hydroxide (conc.) | R | R | Titanium tetrachloride | NR | NR |
| Butyric acid (all conc.) | NR | NR | Glycerol | R | R | Potassium nitrate | R | R | Toluene | LR | LR |
| Calcium carbonate (sat. sol.) | R | R | Glycol | R | R | Potassium perchlorate (10%) | R | R | Triethylene glycol | R | R |
| Calcium chlorate (sat. sol.) | R | R | Glycolic acid | R | R | Potassium permanganate (20%) | R | R | Turpentine | LR | LR |
| Calcium chloride (sat. sol.) | R | R | Hexachlorobenzene | R | R | Potassium persulphate | R | R | Urea (30%) | R | R |
| Calcium disulphite | R | R | Hexanol (commercial) | R | R | Potassium sulphate (conc.) | R | R | Vanilla | R | R |
| Calcium hydrate (all conc.) | R | R | Hydrochloric acid (all conc.) | R | R | Potassium sulphide (conc.) | R | R | Vinegar | R | R |
| Calcium nitrate (50%) | R | R | Hydrochloric acid (dry gas) | R | R | Potassium sulphite (conc.) | R | R | Water | R | R |
| Calcium oxide (sat. sol.) | R | R | Hydrocyanic acid | R | R | Propargyl alcohol | R | R | Wetting agent | R | R |
| Calcium sulphate | R | R | Hydrogen | R | R | Propyl alcohol | R | R | Whisky | R | R |
| Camphor oil | LR | NR | Hydrogen bromide (50%) | R | R | Propylene dichloride (100%) | NR | NR | Wine | R | R |
| Carbon dioxide | R | R | Hydrogen fluoride (40%) | R | R | Propylene glycol | R | R | Xylene | NR | NR |
| Carbon oxide (all conc.) | R | R | Hydrogen fluoride (60%) | R | R | Pyridine | R | R | Yeast | R | R |
| Carbon sulphide | NR | NR | Hydrogen sulphide | R | R | Resorcinol | R | R | Zinc bromide | R | R |
| Carbon tetrachloride | LR | NR | Hydroquinone | R | R | Salicilic acid | R | R | Zinc carbonate | R | R |
| Carbonic acid | R | R | Hypochlorous acid | R | R | Seawater | R | R | Zinc chloride | R | R |
| Castor oil (all conc.) | R | R | Ink | R | R | Selenic acid | R | R | Zinc oxide | R | R |
| Chlorine (100% dry gas) | LR | NR | Iodine (sol. in KJ) | LR | NR | Silver nitrate (sol.) | R | R | Zinc stereate | R | R |
| Chlorine water (sat. sol. 2%) | R | R | Iron chloride (ico) | R | R | Soap solution (all conc.) | R | R | Zinc sulphate | R | R |
| Chlorobenzene | NR | NR | Iron chloride (oso) | R | R | Sodium acetate | R | R | | | |

**R** = Resistant **LR** = Limited resistance **NR** = No-resistance

For information on compatibility for containment of fluids and reagents other than water, it is compulsory to ask for information and approval from the technical office.

For use with liquids other than water, remember to take into consideration any differences in specific weight.

* The tanks do not have Fire Brigade certification to contain diesel/gasoline fuel.

For use with liquids and fluids other than water, comply with local standards in force for environment and safety requirements.

ELBI guarantees resistance of its PLASTO tanks to liquids declared suitable (R) in the table.

Maintaining the characteristics of the liquids contained inside of PLASTO tanks should be checked by and is the responsibility of the user.

## Standard accessories for water

- Connections:

A. with threaded holes

B. with joints: (Fig. 1)

  • drainage (3/4")

  • inlet (dn 1) and overflow (dn 1) in PP with ring nut and gasket;

- Hole ø 28 for float

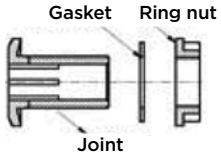
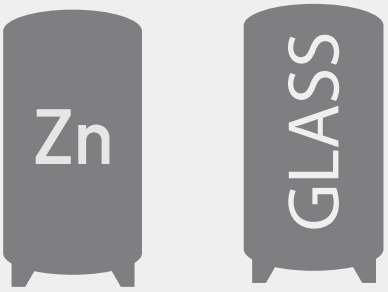



**Figure 1**




# GALVANIZED / GLASSLINED TANKS

## GALVANIZED/GLASSLINED TANKS



# GALVANIZED /GLASSLINED TANKS

## GALVANIZED / GLASSLINED TANKS

### AIR

Tanks with compressed air are used to rationalise use of the compressors in big compressed air systems and to maintain constant pressure in the system.
The AIR series tanks are CE certified as required by the European Directive 97/23/EC (PED).

### ACM/ACZ

Pressurised tanks with an air cushion for accumulation and pressurisation of cold water for residential/industrial use. They are used in all systems where the water mains cannot meet the capacity and pressure demands.
The ACM/ACZ series autoclaves are CE certified as required by the European Directive 97/23/EC (PED).

### SC\E

The cold water storage tanks at atmospheric pressure can be used as first water tanks that are not pressurised or as pressurised storage tanks for cold water (accumulation without the air cushion). The tanks in the SC\E series are covered by Art. 3.3 of the European Directive 97/23/EC (PED) and are not subject to CE marking.

### AR

AR accumulators were designed for installation as a thermal flywheel in air conditioning systems to optimise overall cooling inertia by increasing the volume of chilled water.

### AFV - Z

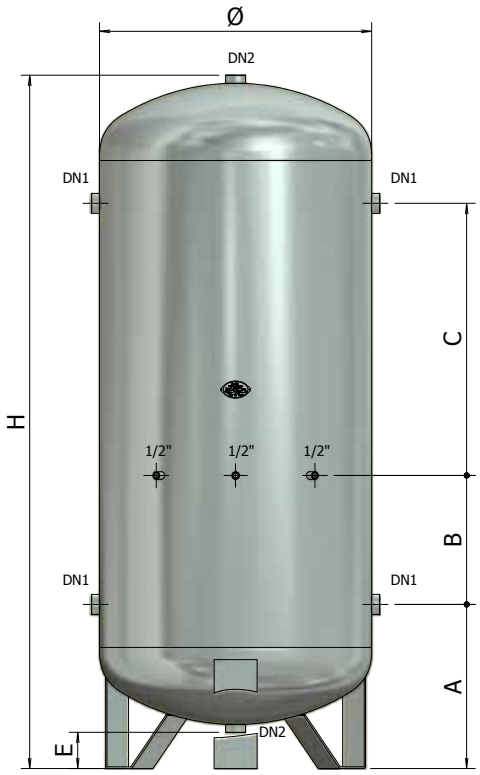
The replaceable bladder autoclaves are CE certified as required by the European Directive 97/23/CE (PED).

# AIR

## GALVANIZED TANKS FOR COMPRESSED AIR, CE CERTIFIED

(750-10.000 LITRES)

## AIR




1500 ÷ 10000 (8 bar)
1000 ÷ 10000 (12 bar)
750 ÷ 2000 (16 bar)

CE certified product

For compressed air

Galvanized

For pressurisation system

**Characteristics:**
• Min./max. working temperature: -10° / +50°C

**Reference standard**
• Declaration of conformity to essential safety requirements according to Directive 97/23/EC (PED).

**Notes**
• Safety valve and gauge supplied on request.

Tanks with compressed air are used to rationalise use of the compressors in big compressed air systems and to maintain constant pressure in the system.
The AIR series tanks are CE certified as required by the European Directive 97/23/EC (PED).

**WARRANTY: 2 YEARS**

## DIMENSIONS

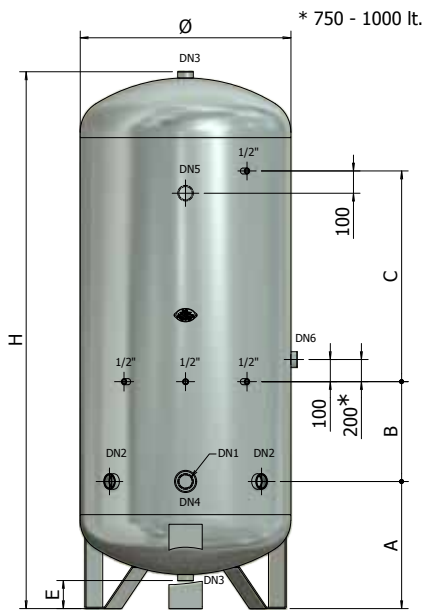
| MODEL | CODE | | P max | | | A | B | C | E | | | NOTES |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | LITRES | bar | mm | mm | mm | mm | mm | mm | DN1 | DN2 | |
| AIR 1500/8 | A4K2J67 | 1500 | 8 | 950 | 2425 | 565 | 450 | 950 | 105 | 2” | 2” | |
| AIR 2000/8 | A4K2J70 | 2000 | 8 | 1100 | 2505 | 605 | 500 | 900 | 105 | 2” | 2” | |
| AIR 2500/8 | A4K2J72 | 2500 | 8 | 1250 | 2575 | 635 | 530 | 870 | 95 | 3” | 2” | |
| AIR 3000/8 | A4K2J74 | 3000 | 8 | 1250 | 2875 | 635 | 800 | 900 | 95 | 3” | 2” | |
| AIR 4000/8 | A4K2J77 | 4000 | 8 | 1400 | 3005 | 725 | 800 | 900 | 145 | 3” | 2” | |
| AIR 5000/8 | A4K2J80 | 5000 | 8 | 1550 | 3035 | 715 | 800 | 900 | 95 | 4” | 2” | |
| AIR 7500/8 | A4K2J87 | 7500 | 8 | 1650 | 4185 | 895 | 1200 | 1400 | 205 | 4” | 2” | |
| AIR 10000/8 | A4K2J92 | 10000 | 8 | 1650 | 5185 | 895 | 1200 | 2400 | 205 | 4” | 2” | |
| AIR 1000/12 | A4K2N62 | 1000 | 12 | 800 | 2370 | 565 | 550 | 650 | 130 | 1”1/2 | 1”1/2 | |
| AIR 1500/12 | A4K2N67 | 1500 | 12 | 950 | 2425 | 565 | 450 | 950 | 105 | 2” | 2” | |
| AIR 2000/12 | A4K2N70 | 2000 | 12 | 1100 | 2505 | 605 | 500 | 900 | 105 | 2” | 2” | |
| AIR 2500/12 | A4K2N72 | 2500 | 12 | 1250 | 2575 | 635 | 530 | 870 | 95 | 3” | 2” | |
| AIR 3000/12 | A4K2N74 | 3000 | 12 | 1250 | 2875 | 635 | 800 | 900 | 95 | 3” | 2” | |
| AIR 4000/12 | A4K2N77 | 4000 | 12 | 1400 | 3005 | 725 | 800 | 900 | 145 | 3” | 2” | |
| AIR 5000/12 | A4K2N80 | 5000 | 12 | 1550 | 3035 | 715 | 800 | 900 | 95 | 4” | 2” | |
| AIR 7500/12 | A4K2N87 | 7500 | 12 | 1650 | 4185 | 895 | 1200 | 1400 | 205 | 4” | 2” | |
| AIR 10000/12 | A4K2N92 | 10000 | 12 | 1650 | 5185 | 895 | 1200 | 2700 | 205 | 4” | 2” | |
| AIR 750/16 | A4K2R59 | 750 | 16 | 750 | 2060 | 555 | 445 | 655 | 150 | 1”1/2 | 1”1/2 | |
| AIR 1000/16 | A4K2R62 | 1000 | 16 | 800 | 2370 | 565 | 550 | 650 | 130 | 1”1/2 | 1”1/2 | |
| AIR 1500/16 | A4K2R67 | 1500 | 16 | 950 | 2425 | 565 | 450 | 950 | 105 | 2” | 2” | |
| AIR 2000/16 | A4K2R70 | 2000 | 16 | 1100 | 2505 | 605 | 500 | 900 | 105 | 2” | 2” | |

# ACM - ACZ

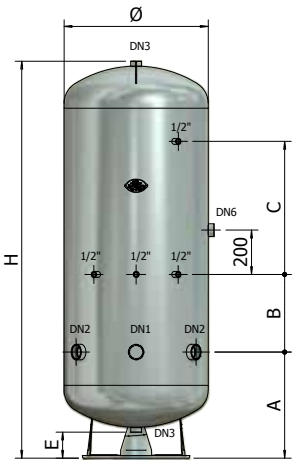
## GALVANIZED TANKS FOR COLD WATER, CE CERTIFIED

(100-10.000 LITRES)

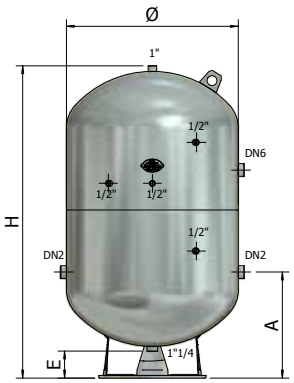
### ACZ 750 - 10.000




### ACZ 200 - 500




### ACM 100 - 500




CE CE certified product

Galvanized

For drinking water

For pressurisation systems

ACM: two sleeve mode
ACZ: traditional model

Pressurised tanks with an air cushion for storage and pressurisation of cold water for residential/industrial use. They are used in all plants where the water mains cannot meet the capacity and pressure demands.
The Galvanized autoclaves of ACM/ACZ series must be supplied with:

- WATER through electric pumps with features that meet the system requirements.
- AIR through the compressor or compressed air network, in order to maintain the air cushion constant.

The air cushion will keep pressure constant in the system and protect the pumps from continuous starts due to intake from the mains water supply.

Safety valve and gauges supplied on request.

**WARRANTY: 2 YEARS**

**Characteristics:**
• Min./max. working temperature: -10° - +50°C

**Reference standard:**
• Declaration of conformity to essential safety requirements according to Directive 97/23/EC (PED).

**Installation:**
• For hydronic systems

**HOW TO SIZE AN AIR CUSHION AUTOCLAVE**
**Calculation of the total volume of the autoclave:**

$$V = 30 \times \frac{Q_{max} \times 60}{A} \times \frac{P_1 + 100}{P_1 - P2}$$

where:
V = volume of the autoclave [litres]
Qmax = maximum simultaneous capacity to supply to the utilities [l/s]
A = maximum number of start-ups of the pump per hour
Ps = pump stop pressure [kPa]
Pa = pump start pressure [kPa]
**Calculation of the volume of the air cushion on pump start:**

$$Va = \frac{V}{1,25} = 0,80 \times V$$

where:
Va = volume of the air cushion [litres]
V = volume of the autoclave [litres]

| MODEL | CODE | LITRES | P max bar | Ø mm | mm | A mm | B mm | C mm | E mm | DN1 | DN2 | DN3 | DN4 | DN5 | DN6 | NOTES |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ACM 100/10 | A402L38 | 100 | 10 | 500 | 785 | 315 | - | - | 90 | - | 1" | - | - | - | 1"1/4 | |
| ACM 200/10 | A402L47 | 200 | 10 | 600 | 1025 | 360 | - | - | 110 | - | 1"1/4 | - | - | - | 1"1/4 | |
| ACM 300/10 | A402L51 | 300 | 10 | 650 | 1210 | 375 | - | - | 110 | - | 1"1/4 | - | - | - | 1"1/4 | |
| ACM 500/10 | A402L55 | 500 | 10 | 775 | 1410 | 480 | - | - | 120 | - | 1"1/2 | - | - | - | 1"1/2 | |
| ACZ 200/ 8 | A432J47 | 200 | 8 | 500 | 1365 | 385 | 255 | 430 | 110 | 1"1/2 | 1"1/2 | 1"1/4 | - | - | 1"1/2 | |
| ACZ 300/ 8 | A432J51 | 300 | 8 | 550 | 1505 | 405 | 285 | 495 | 100 | 2" | 2" | 1"1/4 | - | - | 1"1/2 | |
| ACZ 500/ 8 | A432J55 | 500 | 8 | 650 | 1785 | 470 | 350 | 600 | 105 | 2" | 2" | 1"1/4 | - | - | 1"1/2 | |
| ACZ 750/ 8 | A432J59 | 750 | 8 | 800 | 1920 | 565 | 400 | 600 | 155 | 2" | 2" | 1"1/2 | - | - | 1"1/2 | |
| ACZ 1000/ 8 | A432J62 | 1000 | 8 | 800 | 2370 | 565 | 550 | 700 | 130 | 2" | 2" | 1"1/2 | - | - | 1"1/2 | |
| ACZ 1500/ 8 | A432J67 | 1500 | 8 | 950 | 2425 | 565 | 450 | 950 | 105 | 2" | 2" | 2" | - | - | 1"1/2 | |
| ACZ 2000/8 | A432J70 | 2000 | 8 | 1100 | 2505 | 605 | 500 | 900 | 105 | 2" | 2" | 2" | - | - | 1"1/2 | |
| ACZ 2500/8 | A432J72 | 2500 | 8 | 1250 | 2575 | 635 | 530 | 870 | 95 | 3" | 3" | 2" | - | - | 1"1/2 | |
| ACZ 3000/ 8 | A432J74 | 3000 | 8 | 1250 | 2875 | 635 | 800 | 900 | 95 | 3" | 3" | 2" | 2" | - | 1"1/2 | |
| ACZ 4000/ 8 | A432J77 | 4000 | 8 | 1400 | 3005 | 725 | 800 | 900 | 145 | 3" | 3" | 2" | 2" | - | 1"1/2 | |
| ACZ 5000/ 8 | A432J80 | 5000 | 8 | 1550 | 3035 | 715 | 800 | 900 | 95 | 3" | 3" | 2" | 2" | - | 1"1/2 | |
| ACZ 7500/ 8 | A432J87 | 7500 | 8 | 1650 | 4185 | 895 | 1200 | 1450 | 205 | 3" | 3" | 2" | 2" | 2" | 1"1/2 | |
| ACZ 10000/ 8 | A432J92 | 10000 | 8 | 1650 | 5185 | 895 | 1200 | 1450 | 205 | 3" | 3" | 2" | 2" | 2" | 1"1/2 | |
| ACZ 200/12 | A432N47 | 200 | 12 | 500 | 1365 | 385 | 255 | 430 | 110 | 1"1/2 | 1"1/2 | 1"1/4 | - | - | 1"1/2 | |
| ACZ 300/12 | A432N51 | 300 | 12 | 550 | 1505 | 405 | 285 | 495 | 100 | 2" | 2" | 1"1/4 | - | - | 1"1/2 | |
| ACZ 500/12 | A432N55 | 500 | 12 | 650 | 1785 | 470 | 350 | 600 | 105 | 2" | 2" | 1"1/4 | - | - | 1"1/2 | |
| ACZ 750/12 | A432N59 | 750 | 12 | 800 | 1920 | 565 | 400 | 600 | 155 | 2" | 2" | 1"1/2 | - | - | 1"1/2 | |
| ACZ 1000/12 | A432N62 | 1000 | 12 | 800 | 2370 | 565 | 550 | 700 | 130 | 2" | 2" | 1"1/2 | - | - | 1"1/2 | |
| ACZ 1500/12 | A432N67 | 1500 | 12 | 950 | 2425 | 565 | 450 | 950 | 105 | 2" | 2" | 2" | - | - | 1"1/2 | |
| ACZ 2000/12 | A432N70 | 2000 | 12 | 1100 | 2505 | 605 | 500 | 900 | 105 | 2" | 2" | 2" | - | - | 1"1/2 | |
| ACZ 2500/12 | A432N72 | 2500 | 12 | 1250 | 2575 | 635 | 530 | 870 | 95 | 3" | 3" | 2" | - | - | 1"1/2 | |
| ACZ 3000/12 | A432N74 | 3000 | 12 | 1250 | 2875 | 635 | 800 | 900 | 95 | 3" | 3" | 2" | 3" | - | 1"1/2 | |
| ACZ 4000/12 | A432N77 | 4000 | 12 | 1400 | 3005 | 725 | 800 | 900 | 145 | 3" | 3" | 2" | 2" | - | 1"1/2 | |
| ACZ 5000/12 | A432N80 | 5000 | 12 | 1550 | 3035 | 715 | 800 | 900 | 95 | 3" | 3" | 2" | 2" | - | 1"1/2 | |
| ACZ 7500/12 | A432N87 | 7500 | 12 | 1650 | 4185 | 895 | 1200 | 1450 | 205 | 3" | 3" | 2" | 2" | 2" | 1"1/2 | |
| ACZ 10000/12 | A432N92 | 10000 | 12 | 1650 | 5185 | 895 | 1200 | 1450 | 205 | 3" | 3" | 2" | 2" | 2" | 1"1/2 | |
| ACZ 200/16 | A432R47 | 200 | 16 | 500 | 1365 | 385 | 255 | 430 | 110 | 1"1/2 | 1"1/2 | 1"1/4 | - | - | 1"1/2 | |
| ACZ 300/16 | A432R51 | 300 | 16 | 550 | 1505 | 405 | 285 | 495 | 100 | 3" | 3" | 1"1/4 | - | - | 1"1/2 | |
| ACZ 500/16 | A432R55 | 500 | 16 | 650 | 1785 | 470 | 350 | 600 | 105 | 2" | 2" | 1"1/4 | - | - | 1"1/2 | |
| ACZ 750/16 | A432R59 | 750 | 16 | 750 | 2060 | 555 | 445 | 705 | 150 | 2" | 2" | 1"1/2 | - | - | 1"1/2 | |
| ACZ 1000/16 | A432R62 | 1000 | 16 | 800 | 2370 | 565 | 550 | 700 | 130 | 2" | 2" | 1"1/2 | - | - | 1"1/2 | |
| ACZ 1500/16 | A432R67 | 1500 | 16 | 950 | 2425 | 565 | 450 | 950 | 105 | 2" | 2" | 2" | - | - | 1"1/2 | |
| ACZ 2000/16 | A432R70 | 2000 | 16 | 1100 | 2505 | 605 | 500 | 900 | 105 | 2" | 2" | 2" | - | - | 1"1/2 | |

**Table of the pressure switch calibrations for some building heights**

| Building height Max (m) | 8 | 10 | 12 | 14 | 16 | 18 | 20 | 22 | 24 | 26 | 28 | 30 | 32 | 34 | 36 | 38 | 40 | 42 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Minimum pressure $P_1$ (bar) | 2,0 | 2,2 | 2,5 | 2,7 | 3,0 | 3,2 | 3,4 | 3,7 | 4,0 | 4,2 | 4,4 | 4,6 | 4,9 | 5,1 | 5,3 | 5,6 | 5,8 | 6,0 |
| Maximum pressure $P_2$(bar) | 3,0 | 3,2 | 3,5 | 3,7 | 4,0 | 4,2 | 4,4 | 4,7 | 5,0 | 5,2 | 5,4 | 5,6 | 5,9 | 6,1 | 6,3 | 6,6 | 6,8 | 7,0 |

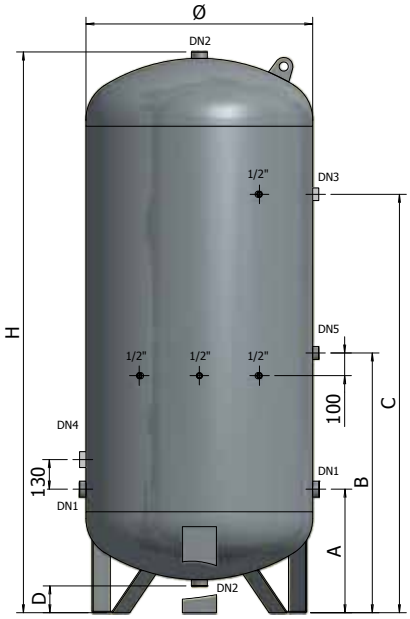
These calibrations enable circa 1 atmosphere of minimum pressure on use in the highest intake point.

# SC/E

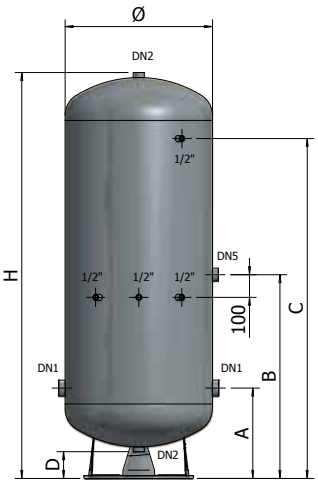
## GALVANIZED TANKS FOR COLD WATER, WITHOUT CE CERTIFICATION

(100 - 5.000 LITRES)

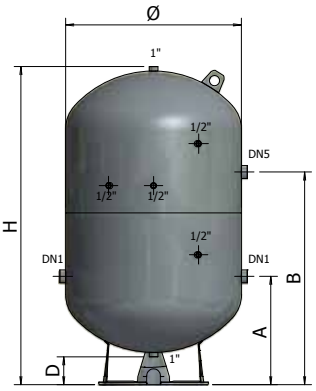

### SC/E 750 - 5000




### SC/E 100 - 500




### SC/E2 100 - 500




For drinking water

Galvanized

For pressurisation systems

**Characteristics:**

• Min./max. working temperature: -10° - +50°C

**Reference standard:**

• Complies with Art. 3.3 of the European Directive 97/23/EC (PED) with CE marking.

The SC/E cold water storage tanks can be used as first water tanks that are not pressurised or as pressurised storage tanks for cold water (accumulation without the air cushion).

**WARRANTY: 2 YEARS**

## DIMENSIONS

| MODEL | CODE | | P max | | | A | B | C | D | | | | | | NOTES |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | LITRES | bar | mm | mm | mm | mm | mm | mm | DN1 | DN2 | DN3 | DN4 | DN5 | |
| SC/E2 100 | 1550101 | 100 | 10 | 500 | 785 | 315 | 490 | - | 90 | 1" | - | - | - | 1"1/4 | |
| SC/E2 200 | 1550209 | 200 | 10 | 600 | 1025 | 360 | 670 | - | 110 | 1"1/4 | - | - | - | 1"1/4 | |
| SC/E2 300 | 1550306 | 300 | 10 | 650 | 1210 | 375 | 795 | - | 110 | 1"1/4 | - | - | - | 1"1/4 | |
| SC/E2 500 | 1550403 | 500 | 10 | 775 | 1410 | 480 | 940 | - | 120 | 1"1/2 | - | - | - | 1"1/2 | |
| SC/E 100 | 1550110 | 100 | 10 | 400 | 970 | 270 | 420 | 770 | 90 | 1" | 1"1/4 | - | - | 1"1/4 | |
| SC/E 200 | 1550220 | 200 | 10 | 500 | 1255 | 345 | 635 | 985 | 110 | 2" | 1"1/4 | - | - | 1"1/2 | |
| SC/E 300 | 1550350 | 300 | 10 | 550 | 1490 | 395 | 675 | 1175 | 100 | 2" | 1"1/4 | - | - | 1"1/2 | |
| SC/E 500 | 1550420 | 500 | 10 | 650 | 1785 | 390 | 790 | 1490 | 105 | 2" | 1"1/4 | - | - | 1"1/2 | |
| SC/E 750 | 1550501 | 750 | 6 | 800 | 1905 | 470 | 870 | 1725 | 145 | 2" | 1"1/2 | - | - | 1"1/2 | |
| SC/E 1000 | 1550608 | 1000 | 6 | 800 | 2155 | 470 | 925 | 1800 | 145 | 2" | 1"1/2 | - | - | 1"1/2 | |
| SC/E 1500 | 1550705 | 1500 | 6 | 1000 | 2475 | 545 | 1045 | 1845 | 145 | 2" | 2" | - | - | 1"1/2 | |
| SC/E 2000 | 1550802 | 2000 | 6 | 1100 | 2445 | 525 | 1075 | 2025 | 135 | 2" | 2" | - | - | 1"1/2 | |
| SC/E 3000 | 1551001 | 3000 | 6 | 1250 | 2830 | 565 | 1255 | 2355 | 115 | 2"1/2 | 2" | 1"1/2 | 2"1/2 | 1"1/2 | |
| SC/E 5000 | 1551205 | 5000 | 6 | 1600 | 3040 | 675 | 1365 | 2465 | 130 | 2"1/2 | 2" | 1"1/2 | 2"1/2 | 1"1/2 | |

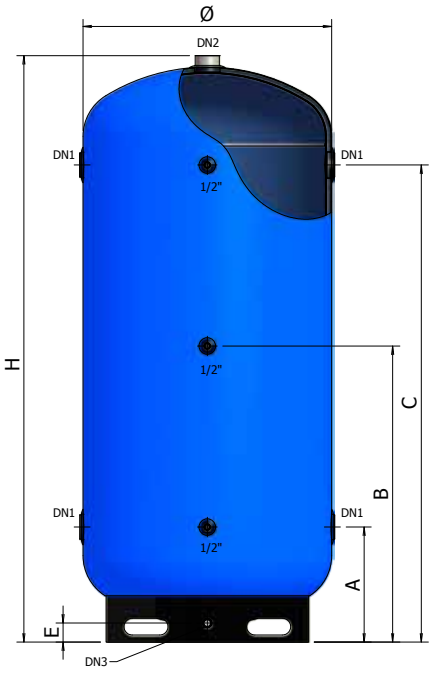
GLASS

# AR

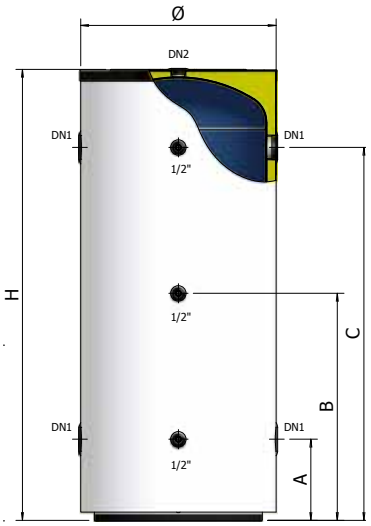
## GLASSLINED ACCUMULATORS FOR CHILLED WATER

(100 - 5.000 LITRES)

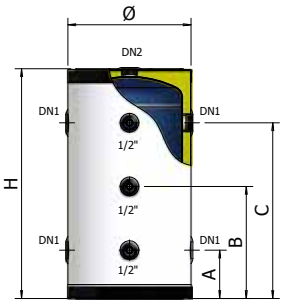
**1500- 5000 l. VERSION (WITH SKIRT)**




**200 - 1000 l. VERSION (WITH SKIRT)**




**100 l. VERSION (WITHOUT BASE)**




For chilled water

Not for drinking water

For air conditioning systems

Polyurethane insulation

Internal, glasslined anti-corrosion treatment

Handling by forklift

**WARRANTY: 5 YEARS**

### CHARACTERISTICS:

- Min./max. working temperature: -10° / +95°C (100 - 1000 l)
- Min./max. working temperature: -10° / +50°C (1500 - 5000 l)

### REFERENCE STANDARDS

**TANKS:**

- Complies with Art. 3.3 of the European Directive 97/23/EC (PED) without CE marking.

### INTERNAL GLASSLINING:

DIN 4753

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

### INSTALLATION:

- Use as a thermal flywheel in air conditioning systems to optimise cooling inertia by increasing the volume of chilled water.

## DIMENSIONS

| MODEL | CODE | LITRES | P max bar | mm | mm | A mm | B mm | C mm | E mm | DN1 | DN2 | DN3 | NOTES |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| AR 100 | 1681124 | 100 | 10 | 460 | 885 | 185 | 425 | 665 | – | 1"1/2 | 1"1/4 | – | |
| AR 200 | 1681129 | 200 | 10 | 600 | 1160 | 260 | 590 | 920 | – | 1"1/2 | 1"1/4 | – | |
| AR 300 | 1681133 | 300 | 10 | 650 | 1400 | 285 | 710 | 1135 | – | 2" | 1"1/4 | – | |
| AR 500 | 1681135 | 500 | 10 | 750 | 1695 | 320 | 855 | 1390 | – | 3" | 1"1/4 | – | |
| AR 800 | 1681139 | 800 | 10 | 900 | 1785 | 370 | 905 | 1440 | – | 3" | 1"1/2 | – | |
| AR 1000 | 1681141 | 1000 | 10 | 900 | 2035 | 370 | 1030 | 1690 | – | 3" | 1"1/2 | – | |
| AR 1500 | A460H67 VB120 | 1500 | 6 | 1040 | 2470 | 485 | 1245 | 2005 | 80 | 3" | 3" | 1" | |
| AR 2000 | A460H70 VB120 | 2000 | 6 | 1140 | 2445 | 475 | 1235 | 1995 | 80 | 3" | 3" | 1" | |
| AR 3000 | A460H74 VB120 | 3000 | 6 | 1290 | 2840 | 540 | 1430 | 2320 | 80 | 4" | 3" | 1" | |
| AR 5000 | A460H80 VB120 | 5000 | 6 | 1640 | 3040 | 645 | 1535 | 2425 | 80 | 4" | 3" | 1" | |

The AR accumulators are designed to be installed as a thermal flywheel in air conditioning systems in order to optimise overall cooling inertia by increasing the volume of chilled water.
The additional accumulation also enables less frequent intervention on the cooling units, making them therefore easier on the motors and the equipment.
The accumulators were built using quality sheet metal and are welded using automatic procedures that guarantee a high level of quality.
They are supplied with threaded connections suitable for their type of use.
The accumulators are supplied with an inner, glasslined, anti-corrosive treatment.

**GENERAL INSTRUCTIONS FOR THE CHOICE OF AN ACCUMULATOR**

A practical and useful formula to determine the accumulation volume is as follows:

$$C = \frac{W\ 4}{60\Delta T}$$

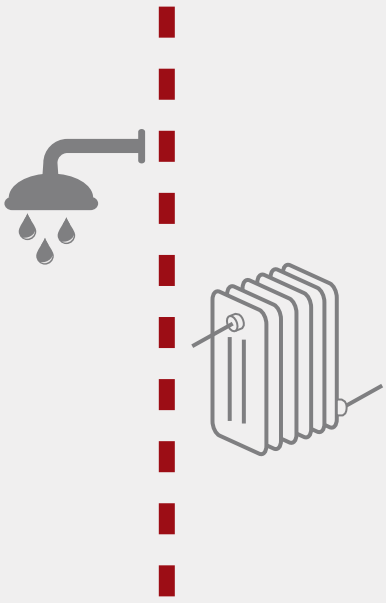
where:
C = is the necessary accumulator volume (litres)
W = is the power of the cooling unit (W)

$\Delta T$ = is the difference between the minimum and maximum working temperature (°C)
Another practical method, used to choose the accumulation volume, is to foresee the total volume (accumulator + system) proportional to the power according to the values outlined below:

1) ON-OFF systems: 24 litres per kW of power
2) systems with two partialisation levels: 12 litres per kW of power
3) systems with four partialisation levels: 6 litres per kW of power

## TECHNICAL CHARACTERISTICS

| MODEL | TYPE OF INSULATION | THICKNESS OF INSULATION | DENSITY OF INSULATION | INITIAL THERMAL CONDUCTIVITY | EXTERNAL COVER |
|---|---|---|---|---|---|
| AR 100 | 95% closed cells rigid expanded polyurethane, CFC - HCFC free | 50 mm | 40 kg/m³ | 23,5 mW/m K | Grey polystyrene RAL 9006 |
| AR 200 | | | | | |
| AR 300 | | | | | |
| AR 500 | | | | | |
| AR 800 | | | | | |
| AR 1000 | | | | | |
| AR 1500 | Closed cell, cross-linked polyethylene | 20 mm | 30 kg/m³ | 37,0 mW/m K | Skay blue RAL 5015 |
| AR 2000 | | | | | |
| AR 3000 | | | | | |
| AR 5000 | | | | | |



# HOT WATER TANKS

## HOT WATER TANKS - ACCUMULATORS

# HOT WATER TANKS – ACCUMULATORS

**THE ELBI HOT WATER TANKS - ACCUMULATORS ARE SUITABLE FOR INSTALLATION ON RESIDENTIAL AND INDUSTRIAL SYSTEMS TO PRODUCE AND ACCUMULATE HOT WATER FOR SANITARY-HYGIENE PURPOSES THANKS TO THEIR FUNCTIONALITY AND RELIABILITY.**

The various product lines offer the possibility of finding an adequate answer to numerous problems that designers and/or installation technicians have to deal with when implementing systems with a high level of thermal efficiency.

**Why using an ELBI hot water tank - accumulator:**

**ANTI-CORROSION TREATMENT**
**Glasslining** treatment according to standard **DIN 4753**.

It is composed of a first sandblast phase of the cylinders for internal washing, followed by a liquid enamel application phase and finally glasslining in the furnace at 900°C. The entire cycle is automated and controlled electronically in each phase; the operators carry out the supervision and loading/unloading.
The system enables a glasslining manufacturing capacity to be achieved up to 100 cylinders per work shift. Each piece is checked and tested at the end of the cycle according to strict criteria based on standard DIN 4753

**INSULATION**
Elbi Hot Water Cylinders and Storage tanks come with rigid expanded polyurethane insulation CFC and HCFC free, or with open cells flexible expanded polyurethane insulation. The insulation thickness varies with the cylinder size to obtain the lowest thermal loss from the cylinders.

**CATHODIC PROTECTION WITH SACRIFICIAL ANODE**
Cathodic Protection with a sacrificial anode is an electrochemical technique used to screen out the metal surfaces from the corrosion exposed to an elecrolytic environment (soil, seawater, freshwater, chemical substances, concrete, etc.).
The easiest way to apply protection with sacrificial anode is to connect the metal to be protected with another metal that corrodes, called “sacrificial metal”. The sacrificial metal then corrodes instead of the metal to keep protected.
The cylinders - hot whater storage tanks are standard equipped with a magnesium anode. The magnesium anodes used can be of three types:

- **Magnesium anode SIMPLETEST**. The actual wear out of the anode can be tested by checking the valve connected on the plug. The water coming out of the valve clearly indicates that the anode must be replaced. The anode is connected to the cylinder through an electric cable.
- **Magnesium anode with TESTER**. The actual wear out of the anode can be tested by simply pressing the button on the tester. The anode is connected to the cylinder through an electric cable.
- **Magnesium anode with isolated plug**.

**IMPRESSED CURRENT CATHODIC PROTECTION**
Cathodic protections with Titanium Anode are supplied on request.
This special anode ensures an electrical potential to the electrolyte (water) using an impressed continuous current. In this way the water is electrically polarised, obtaining permanent protection without the need for periodic check-ups and maintenance by the operators.

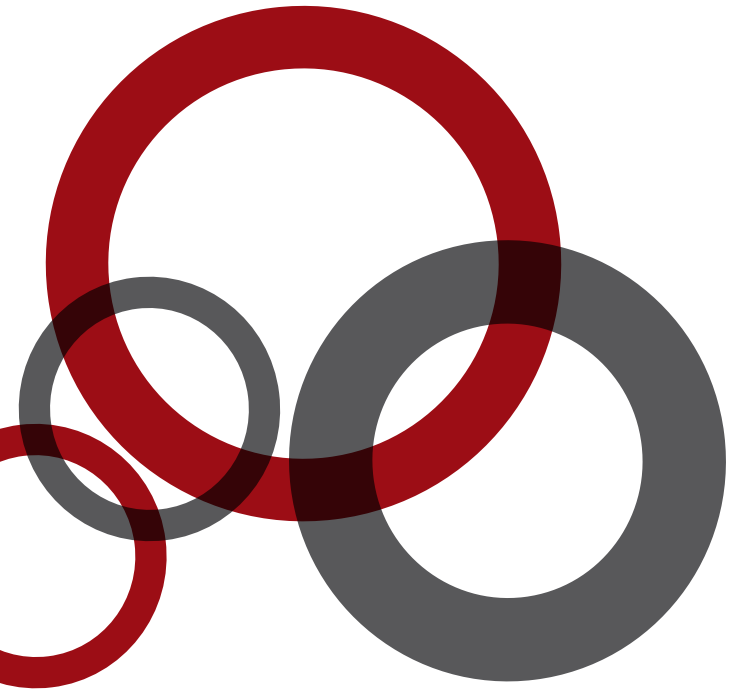
**IMPORTANT NOTICE – FOR USE WITH STEAM**
(read carefully instructions sheet)
For all BSH, BSV, BSM, BST Cylinders series:
Heat Exchanger: Max Work. Pressure: 1 bar / Max Work. Temp.: +120° C.
For all BF-1, BF-2, BF-3 Cylinders series:
Heat Exchanger: Max Work. Pressure: 2 bar – Max Work. Temp.: +134° C.
If temperature in the primary circuit exceeds 100°C, special gaskets for use with steam shall be ordered with the cylinder.
Safety devices shall be installed to cut-off the steam heat source to avoid overheating in the cylinder.

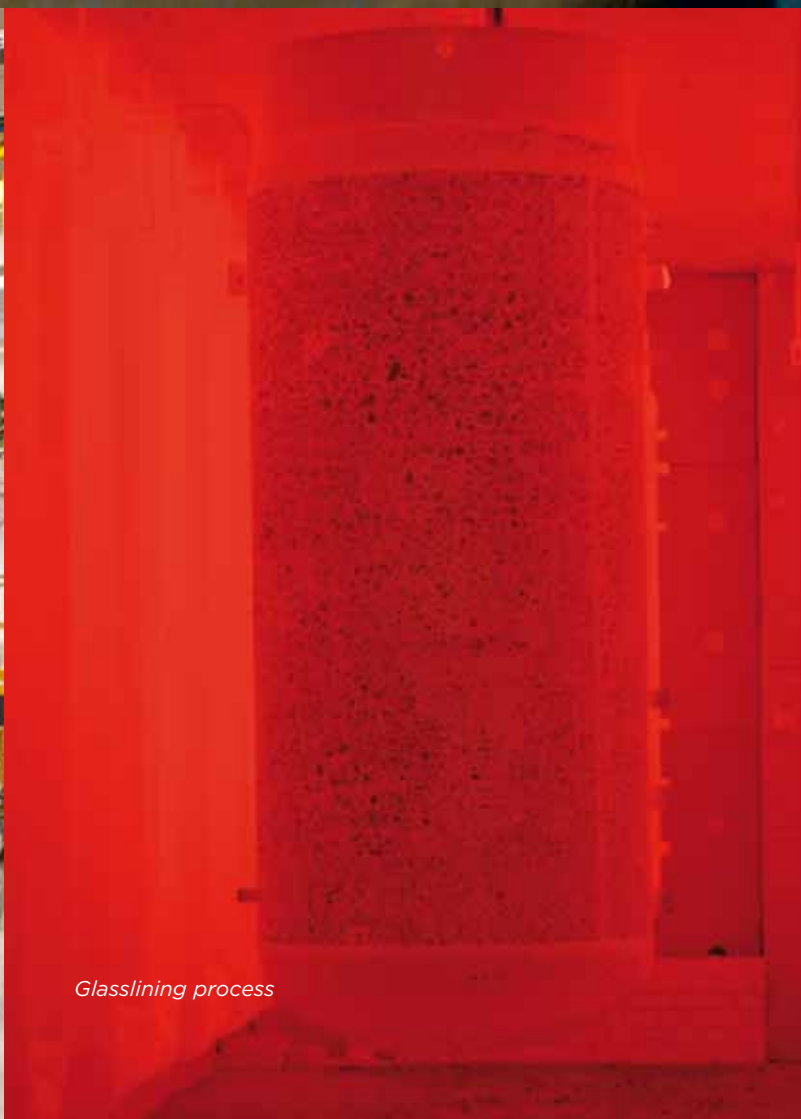
**AVERAGE HOT WATER REQUIREMENT AT 40°C:**

| Type of installation | Type of utility | Litres / person-day |
|---|---|---|
| Homes | popular | from 40 to 50 |
| | medium | from 70 to 80 |
| | residential | from 150 to 200 |
| Sport centres, gyms, swimming pools | - | from 50 to 60 |
| Hospitals, clinics | - | from 130 to 150 |
| Offices | - | from 15 to 200 |
| Dressing rooms in buildings | - | from 30 to 50 |
| Hotels | Rooms with bathroom and bathtub | from 180 to 200 |
| | Rooms with bathroom and shower | 130 |

**HOT WATER REQUIREMENT FOR EQUIPMENT ON EACH USE:**

| Type of installation | LITRES |
|---|---|
| Bathtub 170cm x 70cm | from 160 to 200 |
| Bathtub 105cm x 70cm | 100 to 120 |
| Shower | from 50 to 60 |
| Wash basin | from 10 to 12 |
| Kitchen sink | from 15 to 20 |



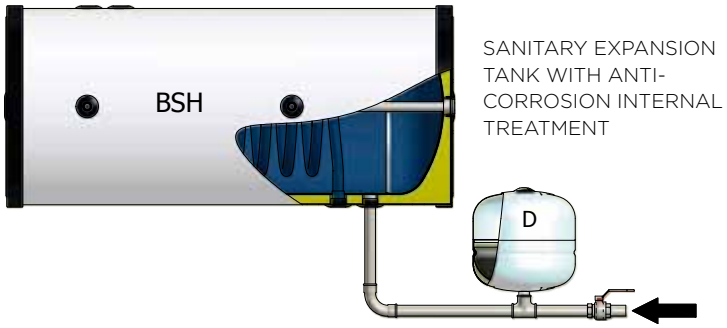


*Glasslining process*

# BSH

## GLASSLINED CYLINDER

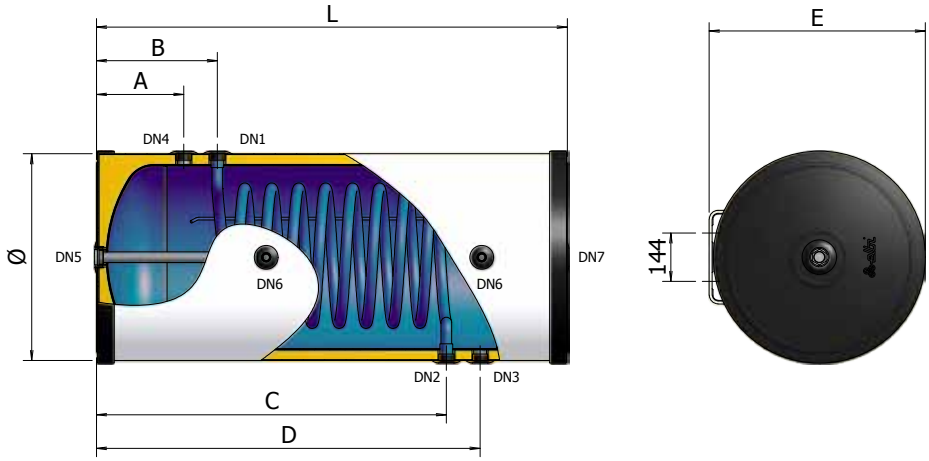
WITH FIXED HEAT EXCHANGER FOR SANITARY HOT WATER, WALL MOUNTING (100 – 300 LITRES)




SANITARY EXPANSION TANK WITH ANTI-CORROSION INTERNAL TREATMENT

SANITARY COLD WATER

## BSH 100 - 150 - 200 - 300




**KEYWORD**

**DN1:** Primary fluid inlet, heat exchanger side; **DN2:** Primary fluid outlet, heat exchanger side; **DN3:** Sanitary cold water inlet; **DN4:** Sanitary hot water outlet; **DN5:** Magnesium anode; **DN6:** Probe (Thermometer, Thermostat); **DN7:** Service connection.

- CYLINDER
- FOR SANITARY HOT WATER
- SUITABLE FOR SOLAR SYSTEMS
- MAGNESIUM ANODE
- INTERNAL ANTI-CORROSION GLASSLINING TREATMENT
- POLYURETHANE INSULATION

+ 95°C
CYLINDER
MAX TEMPERATURE

+ 110°C
EXCHANGER
MAX TEMPERATURE

$P_{MAX}$ 10 bar
MAX WORKING PRESSURE

$P_{SCA}$ 12 bar
HEAT EXCHANGER
MAX PRESSURE

**WARRANTY: 5 YEARS**

**INSULATION:**
Expanded polyurethane without CFC and HCFC

**HEAT EXCHANGER:**
fixed single-tube coil

**REFERENCE STANDARDS**

**CYLINDER:**
Directive PED 97/23/EC – ART. 3.3, without CE marking
Standard EN 12897:2006

**INTERNAL GLASSLINING:**
DIN 4753
The glasslining treatment makes the cylinder suitable to contain hot water for sanitary use and resistant to corrosive phenomena.

**INSTALLATION:**
· traditional boilers (wall-hung and/or floor-standing)
· condensing boilers
· solar thermal systems
**WALL MOUNTING** in vertical or horizontal position.
Wall mounting brackets applied.

## DIMENSIONS

| MODEL | CODE | | HEAT EXCHANGER | | L | A | B | C | D | E | NOTES |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | LITRES | m² | LITRES | mm | mm | mm | mm | mm | mm | mm | |
| BSH-100 | A3B0L38 PGP30 | 100 | 0,40 | 3 | 460 | 885 | 175 | 305 | 585 | 705 | 495 | |
| BSH-150 | A3B0L43 PGP30 | 150 | 0,60 | 4 | 560 | 935 | 230 | 360 | 580 | 710 | 595 | |
| BSH-200 | A3B0L47 PGP30 | 200 | 0,80 | 5 | 560 | 1155 | 230 | 360 | 800 | 930 | 595 | |
| BSH-300 | A3B0L51 PGP30 | 300 | 1,05 | 7 | 610 | 1400 | 260 | 360 | 1040 | 1140 | 645 | |

| MODEL | ANODE ø x ø conn. x L | DN1 | DN2 | DN3 | DN4 | DN5 | DN6 | DN7 |
|---|---|---|---|---|---|---|---|---|
| BSH-100 | 32 x 1.1/4“ x 150 | 1“ | 1“ | 1“ | 1“ | 1.1/4“ | 1/2” | 1.1/4“ |
| BSH-150 | 32 x 1.1/4“ x 200 | 1“ | 1“ | 1“ | 1“ | 1.1/4“ | 1/2” | 1.1/4“ |
| BSH-200 | 32 x 1.1/4“ x 200 | 1“ | 1“ | 1“ | 1“ | 1.1/4“ | 1/2” | 1.1/4“ |
| BSH-300 | 32 x 1.1/4“ x 320 | 1“ | 1“ | 1“ | 1“ | 1.1/4“ | 1/2” | 1.1/4“ |

## TECHNICAL FEATURES

| MODEL | MAX WORKING PRESSURE CYLINDER (Secondary circuit) | MAX. WORKING PRESSURE HEAT EXCHANGER (Primary circuit) | HEAT EXCHANGER PRESSURE DROP |
|---|---|---|---|
| BSH 100 | 10 bar | 12 bar | 50 mbar |
| BSH 150 | | | 80 mbar |
| BSH 200 | | | 110 mbar |
| BSH 300 | | | 200 mbar |

| MODEL | INSULATION TYPE | INSULATION THICKNESS | INSULATION DENSITY | INITIAL THERMAL CONDUCTIVITY | (*) INSULATION THERMAL LOSS | EXTERNAL COVER |
|---|---|---|---|---|---|---|
| BSH 100 | 95% closed cells rigid expanded polyurethane, CFC - HCFC free | 30 mm | 40 kg/m³ | 23,5 mW/m K | 1,01 kWh / 24h | Grey polystyrene RAL 9006 |
| BSH 150 | | | | | 1,32 kWh / 24h | |
| BSH 200 | | | | | 1,63 kWh / 24h | |
| BSH 300 | | | | | 2,16 kWh / 24h | |

(*) Thermal loss calculated with an accumulation temperature equal to 60 °C and with an external temperature equal to 15 °C.

## SAFETY DEVICES

The cylinders must be protected from the effects of over pressure by installing:
- A **SAFETY VALVE** calibrated to a pressure lower than the max. pressure of the cylinder;
- A **SANITARY EXPANSION TANK** model ELBI **D – DV series**

| MODEL | RECOMMENDED SANITARY EXPANSION TANK (mod. ELBI D-DV series) |
|---|---|
| BSH 100 | D - 8 |
| BSH 150 | D - 11 |
| BSH 200 | D - 18 |
| BSH 300 | D - 24 |

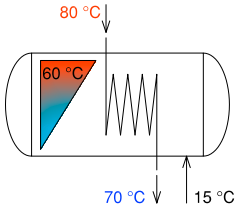
Tank sized using the following parameters:
T. accumulation= 85 °C / T. inlet = 15 °C / Pre-charge pressure = 3 bar / Max pressure = 6 bar
*The recommended capacity must be verified on the basis of the actual dimensions of the system implemented..*

| MODEL | MAGNESIUM ANODE SUPPLIED | CATHODIC PROTECTION APPLICABLE |
|---|---|---|
| BSH-100 | 1.1/4” x 150 / Cod. 8560000 | Cathodic protection with cylinders 100/300 l. Code 8560170 |
| BSH-150 | 1.1/4” x 200 / Cod. 8560010 | |
| BSH-200 | 1.1/4” x 200 / Cod. 8560010 | |
| BSH-300 | 1.1/4” x 320 / Cod. 8560040 | |

## THERMAL YIELD

### ACCUMULATION AT 60 °C

**HEAT EXCHANGER:** T. inlet = 80°C; ΔT = 10°C.
**STORAGE WATER HEATER:** T. inlet =15°C; T. accumulation= 60°C.

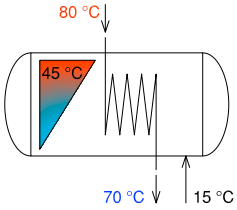



| MODEL CYLINDER | THERMAL POWER [kW] | PUMP CAPACITY [l/hour] | HEATING TIME [min] (1) | PRODUCTION DHW AT 60°C [l/hour] | QUANTITY DHW AT 45°C FOR FIRST 10 min. (2) [l] |
|---|---|---|---|---|---|
| BSH 100 | 9,15 | 807 | 33 | 175 | 105 |
| BSH 150 | 15,00 | 1320 | 37 | 287 | 176 |
| BSH 200 | 19,50 | 1720 | 34 | 373 | 224 |
| BSH 300 | 25,90 | 2290 | 34 | 495 | 300 |

(1) Time required to bring cylinder temperature from 15 °C to 60 °C
(2) Quantity of DHW (Sanitary Hot Water) at 45°C available in first 10 minutes with accumulation of DHW at 60° C

### ACCUMULATION AT 45 °C

**HEAT EXCHANGER:** T.inlet = 80°C; ΔT = 10°C.
**STORAGE WATER HEATER:** T.inlet =15°C; T.accumulation= 45°C.




| MODEL CYLINDER | THERMAL POWER [kW] | PUMP CAPACITY [l/hour] | HEATING TIME [min] (1) | PRODUCTION DHW AT 45°C [l/hour] |
|---|---|---|---|---|
| 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 |

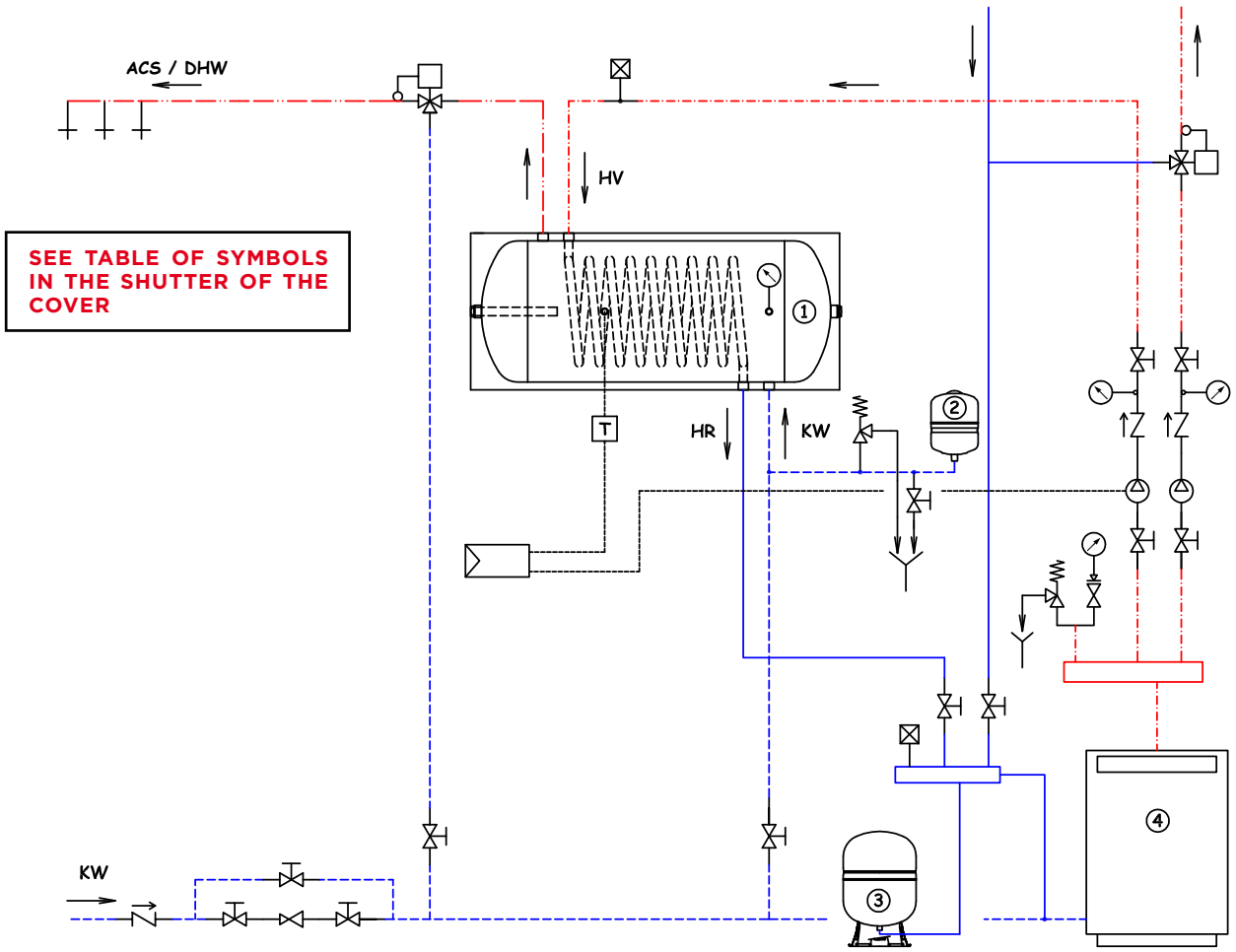
(1) Time required to bring cylinder temperature from 15 °C to 45 °C

## TABLE OF HEATING ELEMENT APPLICABILITY TO CYLINDERS

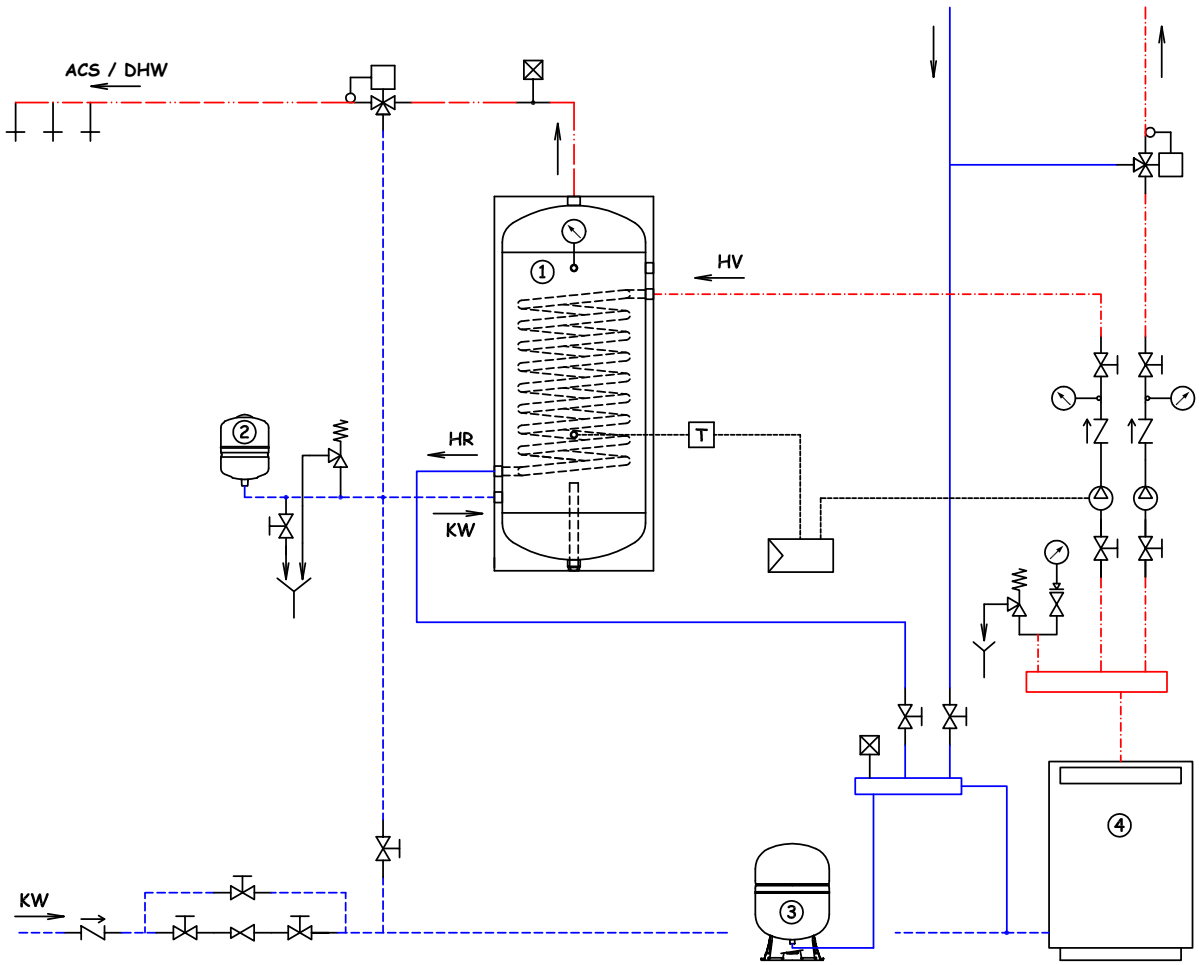
| Heating element model* | | | | | Water heating time from 15° C to 60 °C (expressed in minutes) *I The heating times outlined are approximate* | | | |
|---|---|---|---|---|---|---|---|---|
| CODE | Power (kW) | Voltage (Volt) | Connection | Length mm | BSH-100 | BSH-150 | BSH-200 | BSH-300 |
| 8601000 | 1 | 220 V / MF | G 1.1/4" | 295 | 320 min. | 480 min. | 640 min. | 960 min. |
| 8601650 | 1.65 | 220 V / MF | G 1.1/4" | 450 | 200 min. | 290 min. | 390 min. | 580 min. |
| 8602000 | 2 | 220 V / MF | G 1.1/4" | 515 | 165 min. | 240 min. | 320 min. | 480 min. |
| 8602600 | 2.6 | 220 V / MF | G 1.1/4" | 675 | n.a. | 190 min. | 250 min. | 370 min. |
| 8602601 | 2.6 | 220 V / MF | G 1.1/4" | 360 | 130 min. | 190 min. | 250 min. | 370 min. |
| 8603300 | 3.3 | 220 V / MF | G 1.1/4" | 825 | n.a. | n.a | 190 min. | 290 min |
| 8603301 | 3.3 | 220 V / MF | G 1.1/4" | 435 | 100 min. | 150 min. | 190 min. | 290 min |
| 8604001 | 4 | 220 V / MF | G 1.1/4" | 510 | 85 min. | 120 min. | 160 min. | 240 min. |

n.a.= Heating element not applicable
* In the BSH model heating element must be assembled only with the tank installed in horizontal position.

## HYDRAULIC DIAGRAM 1 (BSH IN HORIZONTAL POSITION)




## HYDRAULIC DIAGRAM 2 (BSH IN VERTICAL POSITION)

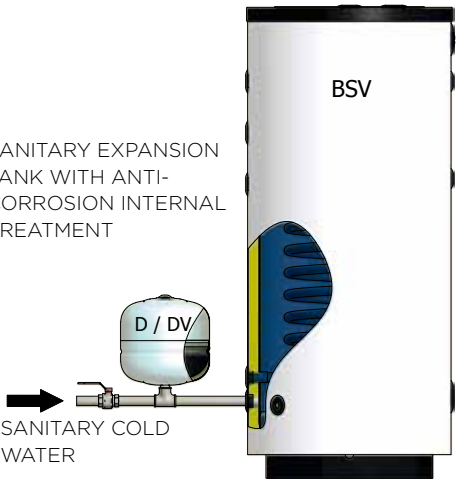


# BSV

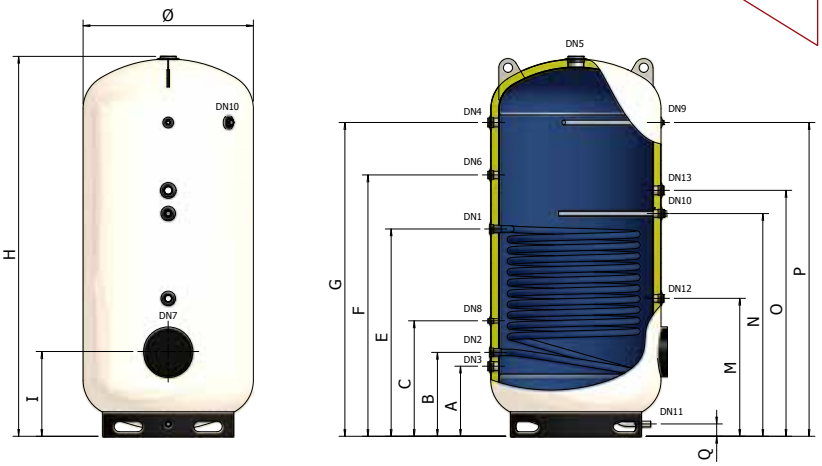
## GLASSLINED CYLINDER

WITH FIXED HEAT EXCHANGER FOR SANITARY HOT WATER (150 - 2000 LITRES)

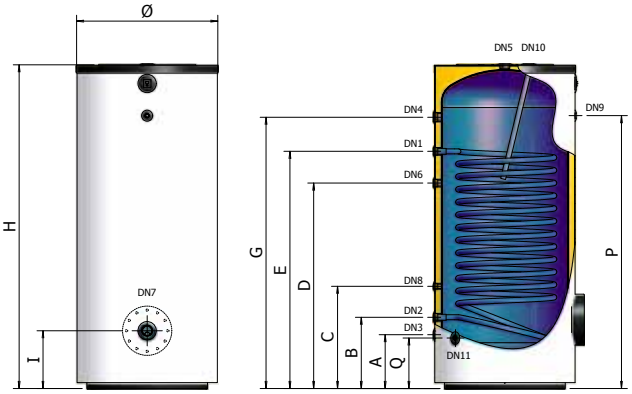
SANITARY EXPANSION TANK WITH ANTI-CORROSION INTERNAL TREATMENT



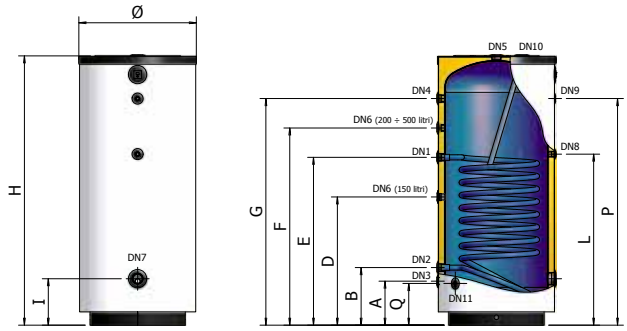

## BSV 1500 - 2000




## BSV 800 - 1000




## BSV 150 - 200 - 300 - 400 - 500




**KEYWORD**

**DN1:** Primary fluid inlet, heat exchanger side; **DN2:** Primary fluid outlet, heat exchanger side; **DN3:** Sanitary cold water inlet; **DN4:** Sanitary cold water outlet; **DN5:** Sanitary hot water outlet; **DN6:** Recirculation; **DN7:** Heating element/Visual indicator light; **DN8:** Probe; **DN9:** Thermometer; **DN10:** Magnesium anode; **DN11:** Drain

- CYLINDER
- FOR SANITARY HOT WATER
- SUITABLE FOR SOLAR SYSTEMS
- ANODE WITH TESTER (150 - 1000)
- 2 MAGNESIUM ANODES (1500 - 2000)
- INTERNAL, ANTI-CORROSIVE GLASSLINING PROCESS
- POLYURETHANE INSULATION

- + 95°C CYLINDER MAX TEMPERATURE
- + 110°C EXCHANGER MAX TEMPERATURE
- $P_{MAX}$ 10 bar (150 - 1000) MAX WORKING PRESSURE
- $P_{MAX}$ 6 bar (1500 - 2000) MAX WORKING PRESSURE
- $P_{SCA}$ 12 bar HEAT EXCHANGER MAX PRESSURE

**WARRANTY: 5 YEARS**

**INSULATION:**

Expanded polyurethane without CFC and HCFC

**HEAT EXCHANGER:**

fixed single-tube coil

**REFERENCE STANDARDS**

**CYLINDER:**

Directive PED 97/23/EC – ART. 3.3, without CE marking
Standard EN 12897:2006

**INTERNAL GLASSLINING**

DIN 4753

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

**INSTALLATION:**

· traditional boilers (wall-hung and/or floor-standing)
· condensing boilers
· solar thermal systems

## DIMENSIONS

| MODEL | CODE | | HEAT EXCHANGER | | | NOTES |
|---|---|---|---|---|---|---|
| | | LITRES | m² | LITRES | mm | mm | |
| BSV-150 | A3A0L43 PGP40 | 150 | 0,60 | 4 | 600 | 950 | |
| BSV-200 | A3A0L47 PGP40 | 200 | 0,70 | 5 | 600 | 1170 | |
| BSV-300 | A3A0L51 PGP40 | 300 | 1,05 | 7 | 650 | 1395 | |
| BSV-400 | A3A0L53 PGP40 | 400 | 1,20 | 8 | 750 | 1445 | |
| BSV-500 | A3A0L55 PGP40 | 500 | 1,45 | 9 | 750 | 1695 | |
| BSV-800 | A3A0L60 PGP40 | 800 | 2,00 | 13 | 900 | 1795 | |
| BSV-1000 | A3A0L62 PGP40 | 1000 | 2,40 | 15 | 900 | 2045 | |
| BSV-800+FL. | A3A1L60 SWS50 | 800 | 2,00 | 13 | 900 | 1795 | |
| BSV-1000+FL. | A3A1L62 SWS50 | 1000 | 2,40 | 15 | 900 | 2045 | |
| BSV-1500+FL. | A3A1H67 VW050 | 1500 | 3,60 | 36 | 1100 | 2465 | |
| BSV-2000+FL. | A3A1H70 VW050 | 2000 | 4,30 | 43 | 1200 | 2445 | |

| MODEL | A mm | B mm | C mm | D mm | E mm | F mm | G mm | I mm | L mm | P mm | Q mm |
|---|---|---|---|---|---|---|---|---|---|---|---|
| BSV-150 | 220 | 300 | / | 485 | 715 | / | 765 | 250 | 465 | 685 | 220 |
| BSV-200 | 235 | 320 | / | / | 670 | 765 | 935 | 275 | 785 | 935 | 220 |
| BSV-300 | 255 | 340 | / | / | 955 | 1055 | 1155 | 270 | 955 | 1155 | 240 |
| BSV-400 | 280 | 365 | / | / | 900 | 1040 | 1180 | 295 | 980 | 1180 | 265 |
| BSV-500 | 280 | 365 | / | / | 1060 | 1245 | 1430 | 295 | 1080 | 1430 | 265 |
| BSV-800 | 340 | 450 | 635 | 995 | 1195 | / | 1470 | 365 | / | 1470 | 320 |
| BSV-1000 | 340 | 450 | 645 | 1295 | 1495 | / | 1710 | 435 | / | 1720 | 320 |
| BSV-800+FL. | 340 | 450 | 635 | 995 | 1195 | / | 1470 | 435 | / | 1470 | 320 |
| BSV-1000+FL. | 340 | 450 | 645 | 1295 | 1495 | / | 1710 | 435 | / | 1720 | 320 |
| BSV-1500+FL. | 455 | 545 | 750 | / | 1345 | 1695 | 2035 | 550 | / | 2035 | 80 |
| BSV-2000+FL. | 445 | 535 | 760 | / | 1425 | 1685 | 2025 | 540 | / | 2025 | 80 |

| MODEL | ANODE ø x ø conn. x L | DN1 | DN2 | DN3 | DN4 | DN5 | DN6 | DN7 | DN8 | DN9 | DN10 | DN11 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| BSV-150 | 32 x 1.1/4“ x 350 | 1“ | 1“ | 1“ | 1“ | 1.1/4” | 3/4” | 2” | 1/2” | 1/2” | 1.1/4” | 1/2” |
| BSV-200 | 32 x 1.1/4“ x 350 | 1“ | 1“ | 1“ | 1“ | 1.1/4” | 3/4” | 2” | 1/2” | 1/2” | 1.1/4” | 1/2” |
| BSV-300 | 32 x 1.1/4“ x 550 | 1“ | 1“ | 1“ | 1“ | 1.1/4” | 3/4” | 2” | 1/2” | 1/2” | 1.1/4” | 1/2” |
| BSV-400 | 32 x 1.1/4“ x 550 | 1“ | 1“ | 1“ | 1“ | 1.1/4” | 3/4” | 2” | 1/2” | 1/2” | 1.1/4” | 1/2” |
| BSV-500 | 32 x 1.1/4“ x 700 | 1“ | 1“ | 1“ | 1“ | 1.1/4” | 3/4” | 2” | 1/2” | 1/2” | 1.1/4” | 1/2” |
| BSV-800 | 32 x 1.1/4“ x 700 | 1“ | 1“ | 1“ | 1.1/4” | 1.1/4” | 1“ | 2” | 1/2” | 1/2” | 1.1/4” | 3/4” |
| BSV-1000 | 32 x 1.1/4“ x 700 | 1“ | 1“ | 1“ | 1.1/4” | 1.1/4” | 1“ | 2” | 1/2” | 1/2” | 1.1/4” | 3/4” |
| BSV-800+FL. | 32 x 1.1/4“ x 700 | 1“ | 1“ | 1“ | 1.1/4” | 1.1/4” | 1“ | Øi 220 | 1/2” | 1/2” | 1.1/4” | 3/4” |
| BSV-1000+FL. | 32 x 1.1/4“ x 700 | 1“ | 1“ | 1“ | 1.1/4” | 1.1/4” | 1“ | Øi 220 | 1/2” | 1/2” | 1.1/4” | 3/4” |
| BSV-1500+FL. | 32 x 1.1/4“ x 670 | 1.1/4” | 1.1/4” | 1.1/2” | 1.1/2” | 3“ | 1.1/4” | Øi 220 | 1/2” | 1/2” | 1.1/4” | 1” |
| BSV-2000+FL. | 32 x 1.1/4“ x 670 | 1.1/4” | 1.1/4” | 1.1/2” | 1.1/2” | 3“ | 1.1/4” | Øi 220 | 1/2” | 1/2” | 1.1/4” | 1” |

| MODEL | M mm | N mm | O mm | DN 12 | DN 13 |
|---|---|---|---|---|---|
| BSV-1500+FL. | 895 | 1445 | 1595 | 1.1/4” | 1.1/2” |
| BSV-2000+FL. | 885 | 1475 | 1605 | 1.1/4” | 1.1/2” |

## TECHNICAL CHARACTERISTICS

| MODEL | MAX WORKING PRESSURE CYLINDER (Secondary circuit) | MAX. WORKING PRESSURE HEAT EXCHANGER (Primary circuit) | HEAT EXCHANGER PRESSURE DROP |
|---|---|---|---|
| BSV 150 | 10 bar | 12 bar | 80 mbar |
| BSV 200 | | | 110 mbar |
| BSV 300 | | | 200 mbar |
| BSV 400 | | | 220 mbar |
| BSV 500 | | | 270 mbar |
| BSV 800 | | | 350 mbar |
| BSV 1000 | | | 400 mbar |
| BSV 1500 | 6 bar | | 510 mbar |
| BSV 2000 | | | 630 mbar |

| MODEL | INSULATION TYPE | INSULATION THICKNESS | INSULATION DENSITY | INITIAL THERMAL CONDUCTIVITY | (*) INSULATION THERMAL LOSS | EXTERNAL COVER |
|---|---|---|---|---|---|---|
| BSV 150 | 95% closed cells rigid expanded polyurethane, CFC - HCFC free | 50 mm | 40 kg/m³ | 23,5 mW/m K | 0,79 kWh / 24h | Grey polystyrene RAL 9006 |
| BSV 200 | | | | | 0,98 kWh / 24h | |
| BSV 300 | | | | | 1,29 kWh / 24h | |
| BSV 400 | | | | | 1,56 kWh / 24h | |
| BSV 500 | | | | | 1,84 kWh / 24h | |
| BSV 800 | | | | | 2,37 kWh / 24h | |
| BSV 1000 | | | | | 2,71 kWh / 24h | |
| BSV 1500 | Open cells flexible expanded polyurethane | 50 mm | 15 kg/m³ | 39,0 mW/m K | 6,53 kWh / 24h | Skay white RAL 9001 |
| BSV 2000 | | | | | 7,15 kWh / 24h | |

(*) Thermal loss calculated with an accumulation temperature equal to 60 °C and with an external temperature equal to 15 °C.

## STANDARD EQUIPMENT

- Anode tester

## SAFETY DEVICES

The cylinders must be protected from the effects of over pressure by installing:
· **SAFETY VALVE** calibrated to pressure lower than the max. cylinder pressure
· **SANITARY EXPANSION TANK** mod. ELBI **D - DV** series

| MODEL | RECOMMENDED SANITARY EXPANSION TANK (mod. ELBI D-DV series) |
|---|---|
| BSV 150 | D – 11 |
| BSV 200 | D – 18 |
| BSV 300 | D – 24 |
| BSV 400 | D – 35 |
| BSV 500 | D – 35 |
| BSV 800 | DV – 50 |
| BSV 1000 | DV – 80 |
| BSV 1500 | DV – 150 |
| BSV 2000 | DV – 150 |

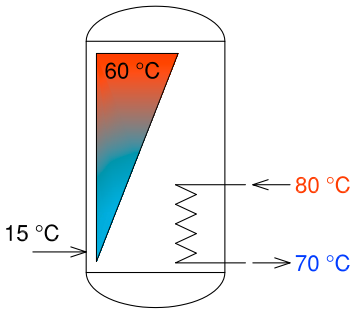
Dimensioning carried out with the following parameters: T. accumulation = 85 °C /T. inlet = 15 °C / P. pre-charge = 3 bar / P. max = 6 bar
*The recommended capacities must be verified on the basis of the actual dimensions of the system implemented.*

| MODEL | MAGNESIUM ANODE SUPPLIED | CATHODIC PROTECTION APPLICABLE |
|---|---|---|
| BSV 150 | 1.1/4" x 350 / Cod.8560046 | Cathodic protection for cylinders 100/400 l. Code 8560170 |
| BSV 200 | 1.1/4" x 350 / Cod.8560046 | |
| BSV 300 | 1.1/4" x 550 / Cod.8560066 | |
| BSV 400 | 1.1/4" x 550 / Cod.8560066 | |
| BSV 500 | 1.1/4" x 700 / Cod.8560086 | Cathodic protection for cylinders 500/1000 l. Code 8560175 |
| BSV 800 | 1.1/4" x 700 / Cod.8560086 | |
| BSV 1000 | 1.1/4" x 700 / Cod.8560086 | |
| BSV 1500 | n.2 x 1.1/4" x 670 / Cod. 8560070 | Cathodic protection for cylinders 1500/2500 l. Code 8560180 |
| BSV 2000 | n.2 x 1.1/4" x 670 / Cod. 8560070 | |

## THERMAL YIELD

### ACCUMULATION AT 60 °C

**HEAT EXCHANGER:** T. inlet = 80°C; ΔT = 10°C.
**STORAGE WATER HEATER:** T. inlet =15°C; T. accumulation= 60°C.

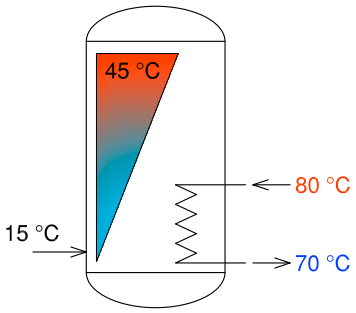



| MODEL CYLINDER | THERMAL POWER [kW] | PUMP CAPACITY [l/hour] | HEATING TIME(1) [min] | PRODUCTION DHW AT 60°C [l/hour] | QUANTITY DHW AT 45°C FOR FIRST 10 min. (2) [l] |
|---|---|---|---|---|---|
| BSV 150 | 15,00 | 1320 | 37 | 287 | 176 |
| BSV 200 | 19,50 | 1720 | 34 | 373 | 224 |
| BSV 300 | 25,90 | 2290 | 34 | 495 | 300 |
| BSV 400 | 29,00 | 2500 | 45 | 554 | 375 |
| BSV 500 | 33,00 | 2900 | 47 | 630 | 449 |
| BSV 800 | 50,00 | 4400 | 49 | 955 | 668 |
| BSV 1000 | 60,00 | 5300 | 47 | 1140 | 770 |
| BSV 1500 | 79,00 | 6900 | 60 | 1500 | 1040 |
| BSV 2000 | 93,00 | 8200 | 67 | 1800 | 1300 |

(1) Time required to bring the temperature of the cylinder from 15 °C to 60 °C
(2) Quantity of DHW (Sanitary Hot Water) at 45°C available in first 10 minutes with accumulation of DHW at 60° C.

### ACCUMULATION AT 45 °C

**HEAT EXCHANGER:** T.inlet = 80°C; ΔT = 10°C.
**STORAGE WATER HEATER:** T.inlet =15°C; T.accumulation= 45°C




| MODEL CYLINDER | THERMAL POWER [kW] | PUMP CAPACITY [l/hour] | HEATING TIME(1) [min] | PRODUCTION DHW AT 45°C [l/hour] |
|---|---|---|---|---|
| BSV 150 | 18,80 | 1650 | 20 | 536 |
| BSV 200 | 25,00 | 2200 | 18 | 715 |
| BSV 300 | 33,00 | 2900 | 18 | 945 |
| BSV 400 | 36,00 | 3170 | 24 | 1030 |
| BSV 500 | 43,00 | 3800 | 24 | 1230 |
| BSV 800 | 59,50 | 5200 | 28 | 1700 |
| BSV 1000 | 68,50 | 6000 | 27 | 1960 |
| BSV 1500 | 95,00 | 8300 | 33 | 2700 |
| BSV 2000 | 112,00 | 9850 | 37 | 3200 |

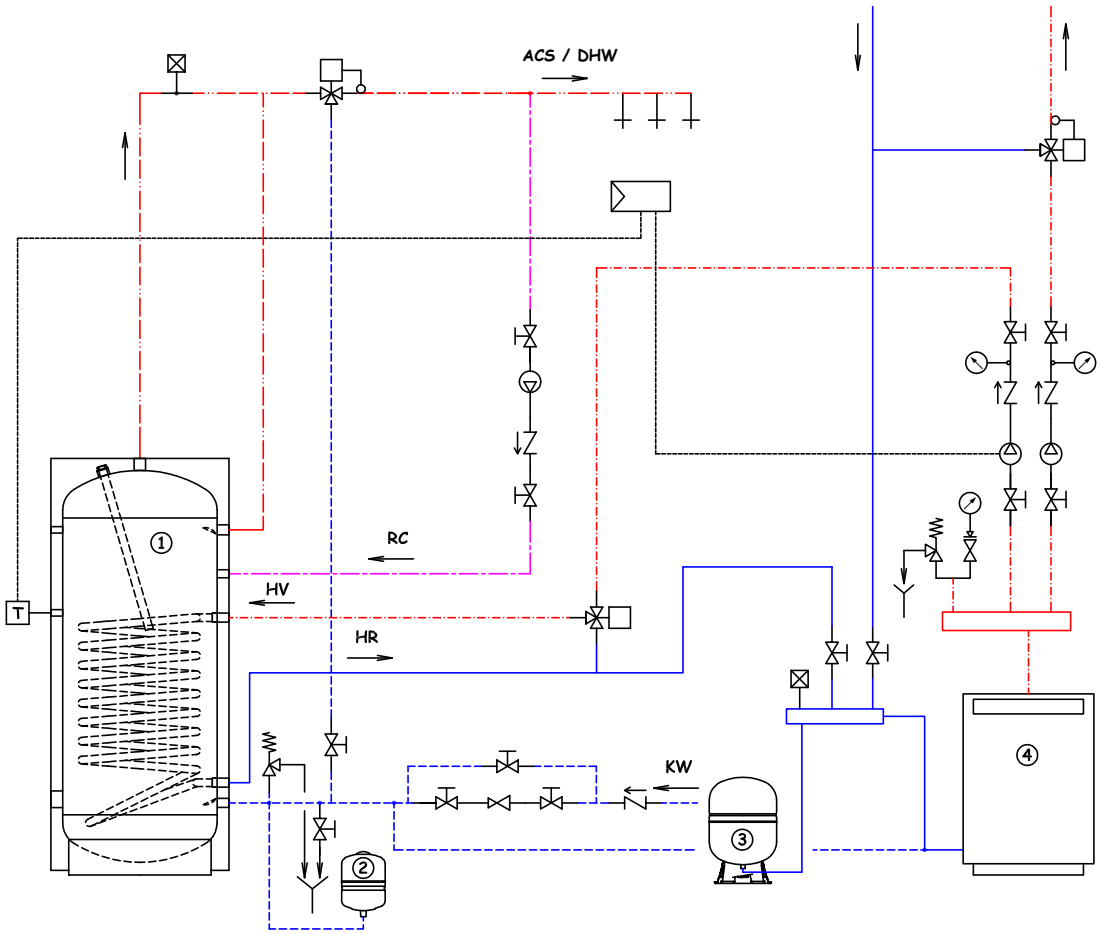
(1) Time required to bring cylinder temperature from 15 °C to 45 °C

## TABLE OF HEATING ELEMENT APPLICABILITY TO CYLINDERS

| Heating element model* | | | | | Water heating time from 15° C to 60 °C (expressed in minutes) *The heating times outlined are approximate* | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| CODE | Power (kW) | Voltage (Volt) | Connection | Length (mm) | BSV-150 | BSV-200 | BSV-300 | BSV-400 | BSV-500 | BSV-800 | BSV-1000 | BSV-1500 | BSV-2000 |
| 8601000 | 1 | 220 V / MF | G 1.1/4" | 295 | 480 min. | 630 min. | 960 min. | 1270 min. | 1580 min. | 2520 min. | 3150 min. | 4720 min. | 6300 min. |
| 8601650 | 1.65 | 220 V / MF | G 1.1/4" | 450 | 285 min. | 380 min. | 580 min. | 770 min. | 970 min. | 1550 min. | 1920 min. | 2870 min. | 3820 min. |
| 8602000 | 2 | 220 V / MF | G 1.1/4" | 515 | n.a. | n.a. | n.a. | 640 min. | 800 min. | 1270 min. | 1580 min. | 2370 min. | 3150 min. |
| 8602600 | 2.6 | 220 V / MF | G 1.1/4" | 675 | n.a. | n.a. | n.a. | n.a. | n.a. | 980 min. | 1230 min. | 1830 min. | 2450 min. |
| 8602601 | 2.6 | 220 V / MF | G 1.1/4" | 360 | 180 min. | 250 min. | 370 min. | 490 min. | 630 min. | 980 min. | 1230 min. | 1830 min. | 2450 min. |
| 8603300 | 3.3 | 220 V / MF | G 1.1/4" | 825 | n.a. | n.a. | n.a. | n.a. | n.a. | n.a. | n.a. | 1450 min. | 1940 min. |
| 8603301 | 3.3 | 220 V / MF | G 1.1/4" | 435 | 145 min. | 200 min. | 295 min. | 390 min. | 490 min. | 780 min. | 980 min. | 1450 min. | 1940 min. |
| 8604001 | 4 | 220 V / MF | G 1.1/4" | 510 | n.a. | n.a. | n.a. | 320 min. | 410 min. | 640 min. | 800 min. | 1200 min. | 1600 min. |
| 8705000 | 5 | 380 V / TF | G 1.1/2" | 445 | 95 min. | 140 min. | 200 min. | 260 min. | 330 min. | 520 min. | 640 min. | 950 min. | 1300 min. |
| 8706000 | 6 | 380 V / TF | G 1.1/2" | 510 | n.a. | n.a. | n.a. | 220 min. | 280 min. | 430 min. | 540 min. | 800 min. | 1060 min. |
| 8708000 | 8 | 380 V / TF | G 1.1/2" | 670 | n.a. | n.a. | n.a. | n.a. | n.a. | 330 min. | 420 min. | 610 min. | 800 min. |
| 8710000 | 10 | 380 V / TF | G 1.1/2" | 820 | n.a. | n.a. | n.a. | n.a. | n.a. | n.a. | n.a. | 490 min. | 640 min. |
| 8712000 | 12 | 380 V / TF | G 1.1/2" | 970 | n.a. | n.a. | n.a. | n.a. | n.a. | n.a. | n.a. | 410 min. | 540 min. |

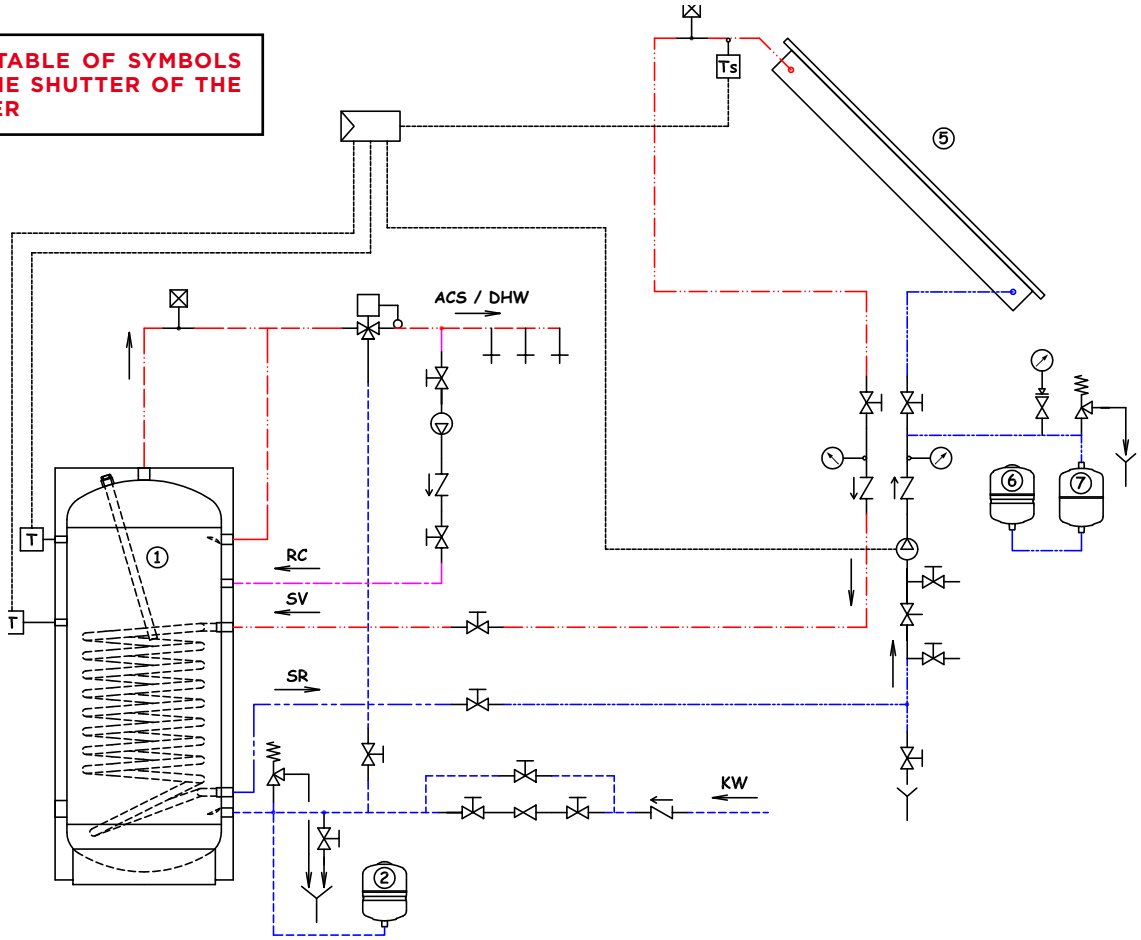
n.a.= Heating element not applicable

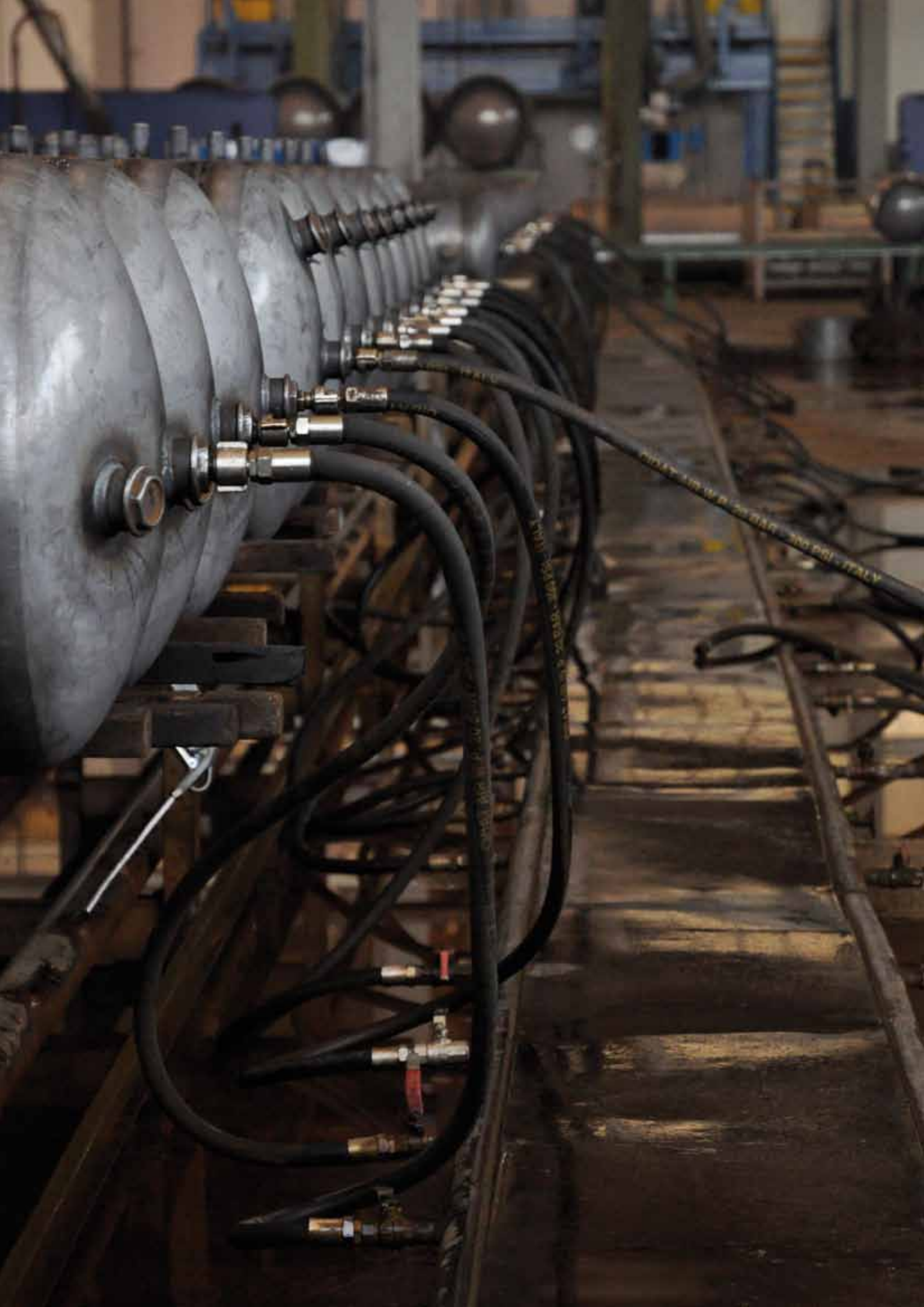
## HYDRAULIC DIAGRAM 1 (BSV CYLINDER WITH BOILER)




## HYDRAULIC DIAGRAM 2 (BSV CYLINDER WITH SOLAR

**SEE TABLE OF SYMBOLS IN THE SHUTTER OF THE COVER**

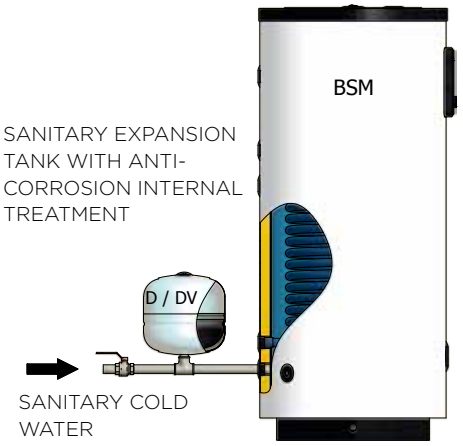




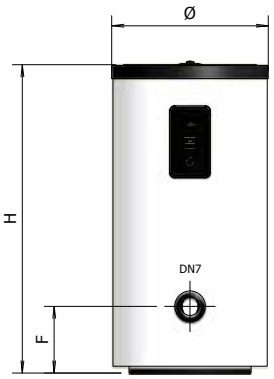
# BSM

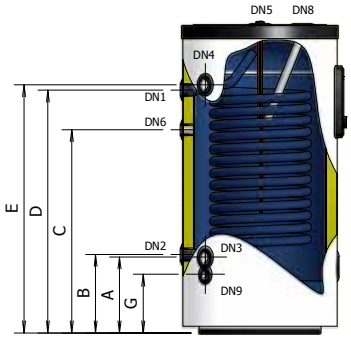
## HIGH PERFORMANCES GLASSLINED CYLINDER

WITH FIXED HEAT EXCHANGER FOR SANITARY HOT WATER (150 - 1000 LITRES)

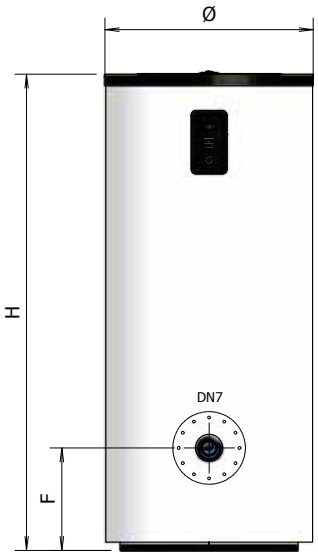


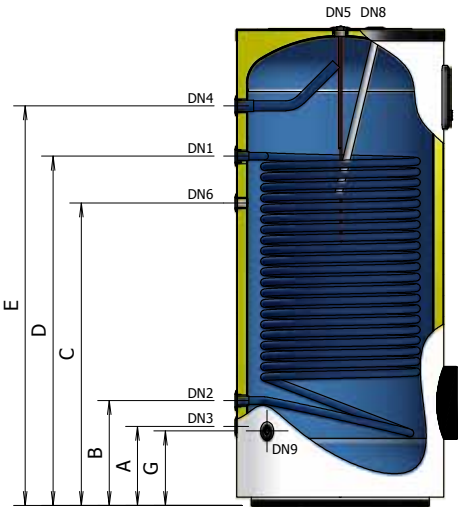

### BSM 150 - 200




### BSM 300 - 1000




**KEYWORD**

**DN1:** Primary fluid inlet, heat exchanger side; **DN2:** Primary fluid outlet, heat exchanger side; **DN3:** Sanitary cold water inlet; **DN4:** Sanitary hot water outlet; **DN5:** Probe (Thermometer, thermostat); **DN6:** Recirculation; **DN7:** Heating element/Visual indicator light; **DN8:** Magnesium anode; **DN9:** Drain

- CYLINDER
- FOR SANITARY HOT WATER
- SUITABLE FOR SOLAR SYSTEMS
- ANODE WITH TESTER
- INTERNAL, ANTI-CORROSION GLASSLINING TREATMENT
- POLYURETHANE INSULATION
- THERMOMETER
- THERMOSTAT

+ 95°C
CYLINDER MAX TEMPERATURE

+ 110°C
MAX TEMPERATURE OF EXCHANGER

$P_{MAX}$ 10 bar
MAX WORKING PRESSURE

$P_{SCA}$ 12 bar
MAX PRESSURE OF EXCHANGER

**WARRANTY: 5 YEARS**

**INSULATION:**
Expanded polyurethane without CFC and HCFC.

**HEAT EXCHANGER:**
fixed single tube coil

**REFERENCE STANDARDS**

**CYLINDER:**
Directive PED 97/23/EC – ART. 3.3, without CE marking
Standard EN 12897:2006

**INTERNAL GLASSLINING:**
DIN 4753
The glasslining treatment makes the cylinder suitable to contain hot water for sanitary and hygienic use and resistant to corrosive phenomena.

**INSTALLATION:**
· traditional boilers (wall-hung and/or floor-standing)
· condensing boilers
· solar thermal systems

| MODEL | CODE | | HEAT EXCHANGER | | | NOTES |
|---|---|---|---|---|---|---|
| | | LITRES | m² | LITRES | mm | mm | |
| BSM-150 | A3C0L43 PGP40 | 150 | 1,10 | 7 | 600 | 950 | |
| BSM-200 | A3C0L47 PGP40 | 200 | 1,60 | 10 | 600 | 1170 | |
| BSM-300 | A3C0L51 PGP40 | 300 | 1,90 | 11 | 650 | 1400 | |
| BSM-400 | A3C0L53 PGP40 | 400 | 2,10 | 13 | 750 | 1445 | |
| BSM-500 | A3C0L55 PGP40 | 500 | 2,70 | 17 | 750 | 1695 | |
| BSM-800 | A3C0L60 PGP40 | 800 | 3,50 | 21 | 900 | 1795 | |
| BSM-1000 | A3C0L62 PGP40 | 1000 | 4,50 | 28 | 900 | 2045 | |
| BSM-800+FL. | A3C1L60 SWS50 | 800 | 3,50 | 21 | 900 | 1795 | |
| BSM-1000+FL. | A3C1L62 SWS50 | 1000 | 4,50 | 28 | 900 | 2045 | |

| MODEL | A mm | B mm | C mm | D mm | E mm | F mm | G mm |
|---|---|---|---|---|---|---|---|
| BSM-150 | 290 | 275 | 590 | 715 | 720 | 250 | 225 |
| BSM-200 | 290 | 300 | 770 | 920 | 940 | 255 | 225 |
| BSM-300 | 260 | 365 | 890 | 1030 | 1160 | 310 | 245 |
| BSM-400 | 280 | 385 | 850 | 960 | 1180 | 330 | 265 |
| BSM-500 | 280 | 385 | 1000 | 1140 | 1430 | 330 | 265 |
| BSM-800 | 340 | 450 | 995 | 1270 | 1460 | 440 | 320 |
| BSM-1000 | 340 | 450 | 1295 | 1495 | 1710 | 440 | 320 |
| BSM-800+FL. | 340 | 450 | 995 | 1270 | 1460 | 435 | 320 |
| BSM-1000+FL. | 340 | 450 | 1295 | 1495 | 1710 | 435 | 320 |

| MODEL | ANODE ø x ø conn. x L | DN1 | DN2 | DN3 | DN4 | DN5 | DN6 | DN7 | DN8 | DN9 |
|---|---|---|---|---|---|---|---|---|---|---|
| BSM-150 | 32 x 1.1/4“ x 350 | 1” | 1” | 1” | 1” | 1”1/4 | 3/4” | 2” | 1”1/4 | 1/2” |
| BSM-200 | 32 x 1.1/4“ x 350 | 1” | 1” | 1” | 1” | 1”1/4 | 3/4” | 2” | 1”1/4 | 1/2” |
| BSM-300 | 32 x 1.1/4“ x 550 | 1” | 1” | 1” | 1” | 1”1/4 | 3/4” | 2” | 1”1/4 | 1/2” |
| BSM-400 | 32 x 1.1/4“ x 550 | 1” | 1” | 1” | 1” | 1”1/4 | 3/4” | 2” | 1”1/4 | 1/2” |
| BSM-500 | 32 x 1.1/4“ x 700 | 1” | 1” | 1” | 1” | 1”1/4 | 3/4” | 2” | 1”1/4 | 1/2” |
| BSM-800 | 32 x 1.1/4“ x 700 | 1” | 1” | 1”1/4 | 1”1/4 | 1”1/4 | 1” | 2” | 1”1/4 | 3/4” |
| BSM-1000 | 32 x 1.1/4“ x 700 | 1” | 1” | 1”1/4 | 1”1/4 | 1”1/4 | 1” | 2” | 1”1/4 | 3/4” |
| BSM-800+FL. | 32 x 1.1/4“ x 700 | 1” | 1” | 1”1/4 | 1”1/4 | 1”1/4 | 1” | Øi 220 | 1”1/4 | 3/4” |
| BSM-1000+FL. | 32 x 1.1/4“ x 700 | 1” | 1” | 1”1/4 | 1”1/4 | 1”1/4 | 1” | Øi 220 | 1”1/4 | 3/4” |

## TECHNICAL CHARACTERISTICS

| MODEL | MAX WORKING PRESSURE CYLINDER (Secondary circuit) | MAX. WORKING PRESSURE HEAT EXCHANGER (Primary circuit) | HEAT EXCHANGER PRESSURE DROP |
|---|---|---|---|
| BSM 150 | 10 bar | 12 bar | 80 mbar |
| BSM 200 | | | 110 mbar |
| BSM 300 | | | 200 mbar |
| BSM 400 | | | 220 mbar |
| BSM 500 | | | 270 mbar |
| BSM 800 | | | 350 mbar |
| BSM 1000 | | | 400 mbar |

| MODEL | INSULATION TYPE | INSULATION THICKNESS | INSULATION DENSITY | INITIAL THERMAL CONDUCTIVITY | (*) INSULATION THERMAL LOSS | EXTERNAL COVER |
|---|---|---|---|---|---|---|
| BSM 150 | 95% closed cells rigid expanded polyurethane, CFC - HCFC free | 50 mm | 40 kg/m³ | 23,5 mW/m K | 0,79 kWh / 24h | Grey polystyrene RAL 9006 |
| BSM 200 | | | | | 0,98 kWh / 24h | |
| BSM 300 | | | | | 1,29 kWh / 24h | |
| BSM 400 | | | | | 1,56 kWh / 24h | |
| BSM 500 | | | | | 1,84 kWh / 24h | |
| BSM 800 | | | | | 2,37 kWh / 24h | |
| BSM 1000 | | | | | 2,71 kWh / 24h | |

(*) Thermal loss calculated with an accumulation temperature equal to 60 °C and with an external temperature equal to 15 °C.

## STANDARD EQUIPMENT

- Anoder tester
- Thermometer
- Thermostat

## SAFETY DEVICES

The cylinders must be protected from the effects of over pressure by installing:
- A **SAFETY VALVE** calibrated to a pressure lower than the max. pressure of the cylinder;
- A **SANITARY EXPANSION TANK** model ELBI **D – DV series**

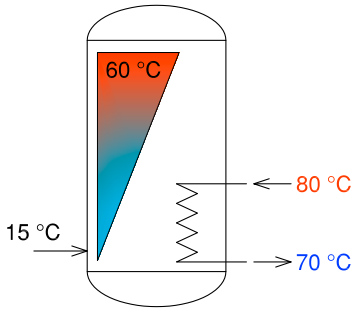
| MODEL | RECOMMENDED SANITARY EXPANSION TANK (mod. ELBI D-DV series) |
|---|---|
| BSM 150 | D - 11 |
| BSM 200 | D - 18 |
| BSM 300 | D - 24 |
| BSM 400 | D - 35 |
| BSM 500 | D - 35 |
| BSM 800 | DV - 50 |
| BSM 1000 | DV - 80 |

Tank sized using the following parameters: T. accumulation= 85 °C / T. inlet = 15 °C / Pre-charge pressure = 3 bar / Max pressure = 6 bar
*The recommended capacity must be verified on the basis of the actual dimensions of the system implemented*

| MODEL | MAGNESIUM ANODE SUPPLIED | CATHODIC PROTECTION APPLICABLE |
|---|---|---|
| BSM 150 | 1.1/4" x 350 / Cod.8560046 | Cathodic protection with cylinders 100/300 l. Code 8560170 |
| BSM 200 | 1.1/4" x 350 / Cod.8560046 | |
| BSM 300 | 1.1/4" x 550 / Cod.8560066 | |
| BSM 400 | 1.1/4" x 550 / Cod.8560066 | |
| BSM 500 | 1.1/4" x 700 / Cod.8560086 | Cathodic protection with cylinders 500/1000 l. Code 8560175 |
| BSM 800 | 1.1/4" x 700 / Cod.8560086 | |
| BSM 1000 | 1.1/4" x 700 / Cod.8560086 | |

## THERMAL YIELD

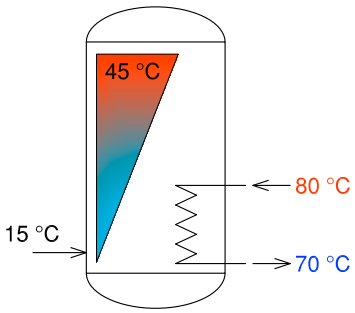
**ACCUMULATION AT 60 °C**
**HEAT EXCHANGER:** T.inlet = 80°C; ΔT = 10°C.
**STORAGE WATER HEATER:** T.inlet =15°C; T.accumulation= 60°C




| MODEL CYLINDER | THERMAL POWER [kW] | PUMP CAPACITY [l/hour] | HEATING TIME(1) [min] | PRODUCTION DHW AT 60°C [l/hour] | QUANTITY DHW AT 45°C FOR FIRST 10 min. (2) [l] |
|---|---|---|---|---|---|
| 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) Time required to bring the temperature of the cylinder from 15 °C to 60 °C
(2) Quantity of DHW (Sanitary Hot Water) at 45°C available in first 10 minutes with accumulation of DHW at 60° C.

**ACCUMULATION AT 45 °C**
**HEAT EXCHANGER:** T.inlet = 80°C; ΔT = 10°C.
**STORAGE WATER HEATER:** T.inlet =15°C; T.accumulation= 45°C.




| MODEL CYLINDER | THERMAL POWER [kW] | PUMP CAPACITY [l/hour] | HEATING TIME(1) [min] | PPRODUCTION DHW AT 45°C [l/hour] |
|---|---|---|---|---|
| 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 |

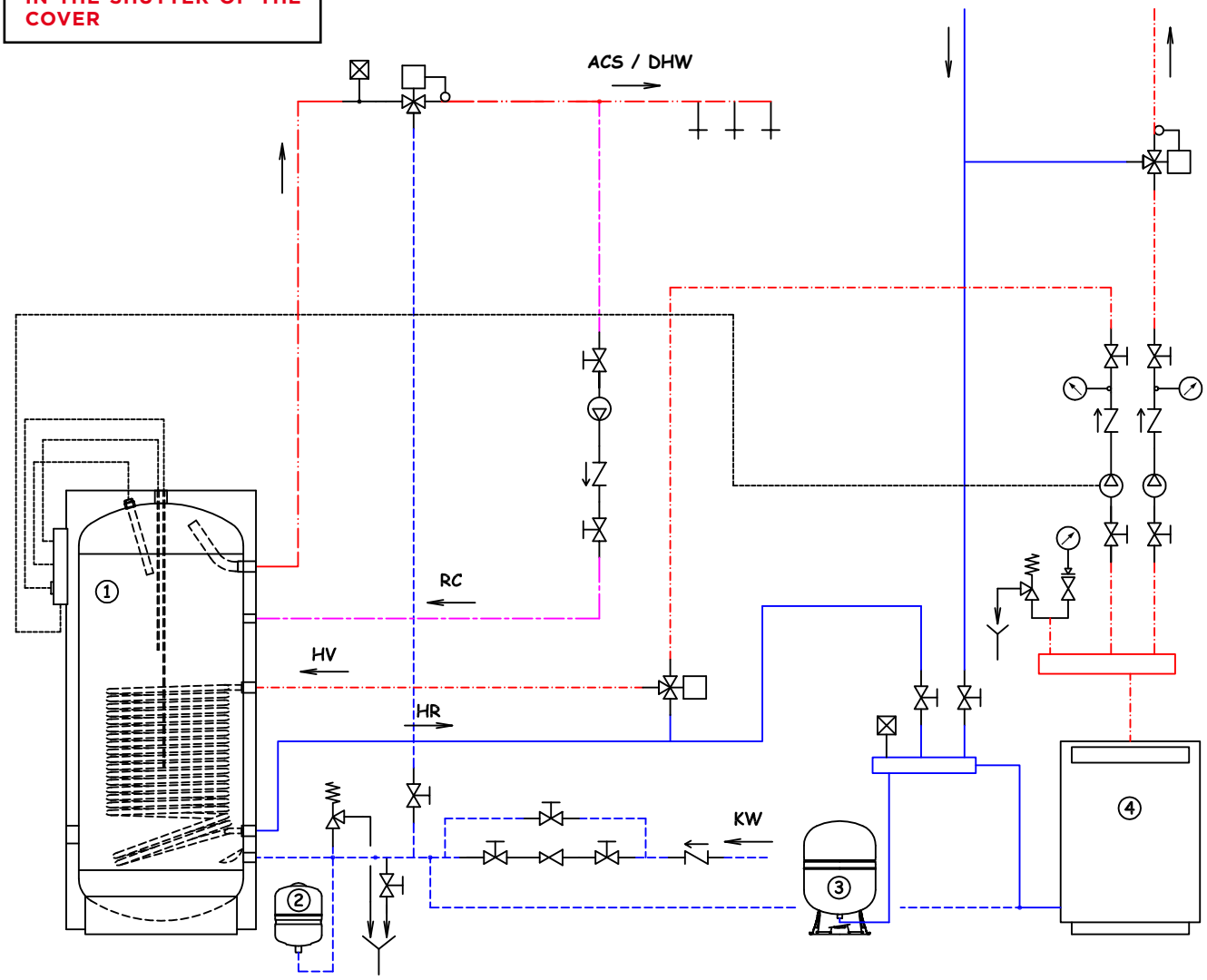
(1) Time required to bring the temperature of the cylinder from 15 °C to 45 °C

## TABLE OF HEATING ELEMENT APPLICABILITY TO CYLINDERS

| Heating element model* | | | | | Water heating time from 15° C to 60 °C (expressed in minutes) *The heating times outlined are approximate* | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| CODE | Power (kW) | Voltage (Volt) | Connection | Length (mm) | BSM-150 | BSV-200 | BSM-300 | BSM-400 | BSM-500 | BSM-800 | BSM-1000 |
| 8601000 | 1 | 220 V / MF | G 1.1/4" | 295 | 480 min. | 630 min. | 960 min. | 1270 min. | 1580 min. | 2520 min. | 3150 min. |
| 8601650 | 1.65 | 220 V / MF | G 1.1/4" | 450 | 285 min. | 380 min. | 580 min. | 770 min. | 970 min. | 1550 min. | 1920 min. |
| 8602000 | 2 | 220 V / MF | G 1.1/4" | 515 | n.a. | n.a. | n.a. | 640 min. | 800 min. | 1270 min. | 1580 min. |
| 8602600 | 2.6 | 220 V / MF | G 1.1/4" | 675 | n.a. | n.a. | n.a. | n.a. | n.a. | 980 min. | 1230 min. |
| 8602601 | 2.6 | 220 V / MF | G 1.1/4" | 360 | 180 min. | 250 min. | 370 min. | 490 min. | 630 min. | 980 min. | 1230 min. |
| 8603300 | 3.3 | 220 V / MF | G 1.1/4" | 825 | n.a. | n.a. | n.a. | n.a. | n.a. | n.a. | n.a. |
| 8603301 | 3.3 | 220 V / MF | G 1.1/4" | 435 | 145 min. | 200 min. | 295 min. | 390 min. | 490 min. | 780 min. | 980 min. |
| 8604001 | 4 | 220 V / MF | G 1.1/4" | 510 | n.a. | n.a. | n.a. | 320 min. | 410 min. | 640 min. | 800 min. |
| 8705000 | 5 | 380 V / TF | G 1.1/2" | 445 | 95 min. | 140 min. | 200 min. | 260 min. | 330 min. | 520 min. | 640 min. |
| 8706000 | 6 | 380 V / TF | G 1.1/2" | 510 | n.a. | n.a. | n.a. | 220 min. | 280 min. | 430 min. | 540 min. |
| 8708000 | 8 | 380 V / TF | G 1.1/2" | 670 | n.a. | n.a. | n.a. | n.a. | n.a. | 330 min. | 420 min. |
| 8710000 | 10 | 380 V / TF | G 1.1/2" | 820 | n.a. | n.a. | n.a. | n.a. | n.a. | n.a. | n.a. |
| 8712000 | 12 | 380 V / TF | G 1.1/2" | 970 | n.a. | n.a. | n.a. | n.a. | n.a. | n.a. | n.a. |

n.a.= Heating element not applicable

SEE TABLE OF SYMBOLS IN THE SHUTTER OF THE COVER

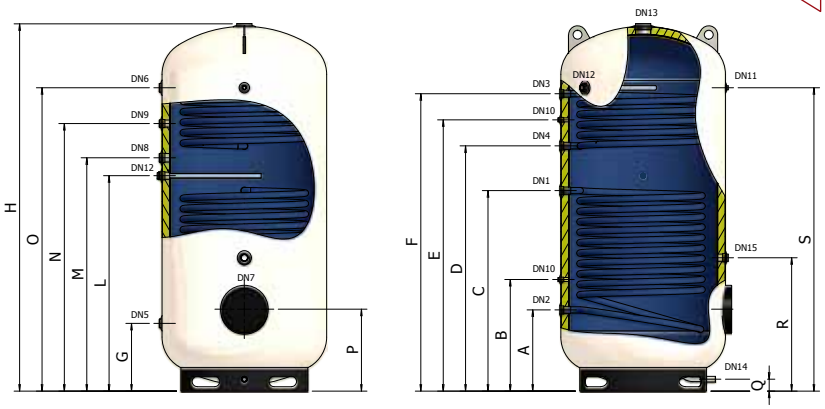


# BST

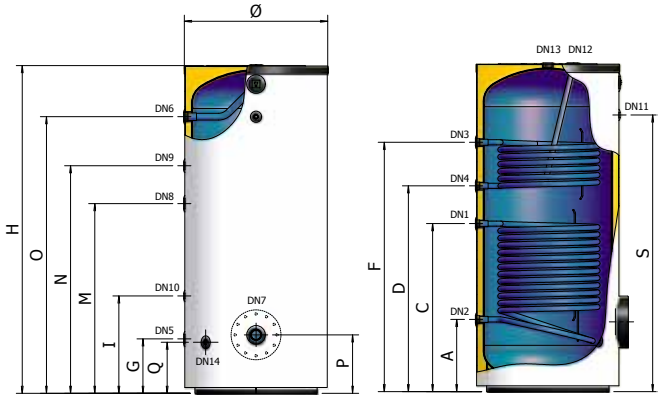
## GLASSLINED CYLINDER FOR SOLAR THERMAL USE

WITH TWO FIXED EXCHANGERS (200 – 2.000 LITRES)

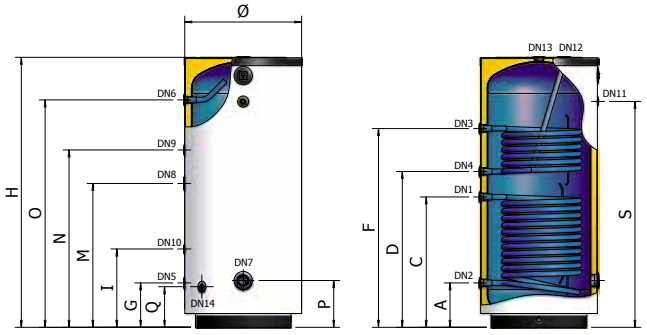

## BST 1500 - 2000




## BST 800 - 1000




## BST 200 - 300 - 400 - 500




**KEYWORD**

**DN1:** Solar exchanger inlet; **DN2:** Solar exchanger outlet; **DN3:** Boiler exchanger inlet; **DN4:** Boiler exchanger inlet; **DN5:** Sanitary cold water inlet; **DN6:** Sanitary hot water outlet; **DN7:** Heating element / Visual indicator light; **DN8:** Heating element; **DN9:** Recirculation; **DN10:** Thermostat; **DN11:** Thermometer; **DN12:** Magnesium anode; **DN13:** Sanitary hot water outlet; **DN14:** Drain

- CYLINDER
- FOR SANITARY HOT WATER
- SUITABLE FOR SOLAR SYSTEMS
- ANODE WITH TESTER (200 – 1000)
- 2 MAGNESIUM ANODES (1500 – 2000)
- INTERNAL, ANTI-CORROSION GLASSLINING TREATMENT
- POLYURETHANE INSULATION

+ 95°C
CYLINDER MAX TEMPERATURE

+ 110°C
MAX TEMPERATURE OF EXCHANGER

$P_{MAX}$ 10 bar (200 - 1000)
MAX WORKING PRESSURE

$P_{MAX}$ 6 bar (1500 - 2000)
MAX WORKING PRESSURE

$P_{SCA}$ 12 bar
MAX PRESSURE OF EXCHANGER

**WARRANTY: 5 YEARS**

**INSULATION:**
Expanded polyurethane without CFC and HCFC

**HEAT EXCHANGER:**
fixed double coil

**REFERENCE STANDARDS**

**CYLINDER:**
Directive PED 97/23/EC – ART. 3.3, without CE marking
Standard EN 12897:2006

**INTERNAL GLASS LINING:**
DIN 4753
The glasslining treatment makes the cylinder suitable to contain hot water for sanitary and hygienic use and resistant to corrosive phenomena.

**INSTALLATION:**
· traditional boilers (wall-hung and/or floor-standing)
· condensing boilers
· solar thermal systems

| MODEL | CODE | EXCHANGER | | | | | | | NOTES |
|---|---|---|---|---|---|---|---|---|---|
| | | | LOWER | | UPPER | | | | |
| | | LITRES | m² | LITRES | m² | LITRES | mm | mm | |
| BST-200 | A3E0L47 PGP40 | 200 | 0,70 | 5 | 0,50 | 4 | 600 | 1170 | |
| BST-300 | A3E0L51 PGP40 | 300 | 1,20 | 8 | 0,75 | 5 | 650 | 1395 | |
| BST-400 | A3E0L53 PGP40 | 400 | 1,40 | 9 | 0,90 | 6 | 750 | 1445 | |
| BST-500 | A3E0L55 PGP40 | 500 | 1,80 | 12 | 0,90 | 6 | 750 | 1695 | |
| BST-800 | A3E0L60 PGP40 | 800 | 2,00 | 13 | 1,20 | 8 | 900 | 1795 | |
| BST-1000 | A3E0L62 PGP40 | 1000 | 2,40 | 15 | 1,20 | 8 | 900 | 2045 | |
| BST-800+FL. | A3E1L60 SWS50 | 800 | 2,00 | 13 | 1,20 | 8 | 900 | 1795 | |
| BST-1000+FL. | A3E1L62 SWS50 | 1000 | 2,40 | 15 | 1,20 | 8 | 900 | 2045 | |
| BST-1500+FL. | A3E1H67 VW050 | 1500 | 3,60 | 36 | 1,60 | 16 | 1100 | 2465 | |
| BST-2000+FL. | A3E1H70 VW050 | 2000 | 4,30 | 43 | 2,10 | 21 | 1200 | 2445 | |

| MODEL | A mm | C mm | D mm | F mm | G mm | I mm | M mm | N mm | O mm | P mm | Q mm | S mm |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| BST-200 | 235 | 585 | 680 | 930 | 235 | 350 | 635 | 760 | 935 | 250 | 220 | 935 |
| BST-300 | 255 | 710 | 815 | 1085 | 255 | 405 | 760 | 950 | 1165 | 270 | 240 | 1155 |
| BST-400 | 280 | 685 | 805 | 1075 | 280 | 470 | 745 | 940 | 1190 | 295 | 265 | 1170 |
| BST-500 | 280 | 820 | 980 | 1250 | 280 | 495 | 905 | 1115 | 1430 | 295 | 265 | 1420 |
| BST-800 | 450 | 910 | 1060 | 1330 | 340 | 610 | 985 | 1195 | 1470 | 365 | 320 | 1470 |
| BST-1000 | 450 | 1045 | 1280 | 1550 | 340 | 610 | 1180 | 1415 | 1720 | 365 | 320 | 1720 |
| BST-800+FL. | 450 | 910 | 1060 | 1330 | 340 | 610 | 985 | 1195 | 1470 | 435 | 320 | 1470 |
| BST-1000+FL. | 450 | 1045 | 1280 | 1550 | 340 | 610 | 1180 | 1415 | 1720 | 435 | 320 | 1720 |
| BST-1500+FL. | 545 | 1345 | 1645 | 1995 | 455 | - | 1565 | 1795 | 2035 | 550 | 80 | 2035 |
| BST-2000+FL. | 515 | 1405 | 1605 | 2025 | 445 | - | 1565 | 1785 | 2025 | 540 | 80 | 2025 |

| MODEL | ANODE ø x ø conn. x L | DN 1 | DN 2 | DN 3 | DN 4 | DN 5 | DN 6 | DN 7 | DN 8 | DN 9 | DN 10 | DN 11 | DN 12 | DN 13 | DN 14 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| BST-200 | 32 x 1.1/4“ x 350 | 1“ | 1“ | 1“ | 1“ | 1“ | 1“ | 2” | 1.1/2” | 3/4” | 1/2” | 1/2” | 1.1/4” | 1.1/4” | 1/2” |
| BST-300 | 32 x 1.1/4“ x 550 | 1“ | 1“ | 1“ | 1“ | 1“ | 1“ | 2” | 1.1/2” | 3/4” | 1/2” | 1/2” | 1.1/4” | 1.1/4” | 1/2” |
| BST-400 | 32 x 1.1/4“ x 550 | 1“ | 1“ | 1“ | 1“ | 1“ | 1“ | 2” | 1.1/2” | 3/4” | 1/2” | 1/2” | 1.1/4” | 1.1/4” | 1/2” |
| BST-500 | 32 x 1.1/4“ x 700 | 1“ | 1“ | 1“ | 1“ | 1“ | 1“ | 2” | 1.1/2” | 3/4” | 1/2” | 1/2” | 1.1/4” | 1.1/4” | 1/2” |
| BST-800 | 32 x 1.1/4“ x 700 | 1“ | 1“ | 1“ | 1“ | 1.1/4” | 1.1/4” | 2” | 1.1/2” | 1“ | 1/2” | 1/2” | 1.1/4” | 1.1/4” | 3/4” |
| BST-1000 | 32 x 1.1/4“ x 700 | 1“ | 1“ | 1“ | 1“ | 1.1/4” | 1.1/4” | 2” | 1.1/2” | 1“ | 1/2” | 1/2” | 1.1/4” | 1.1/4” | 3/4” |
| BST-800+FL. | 32 x 1.1/4“ x 700 | 1“ | 1“ | 1“ | 1“ | 1.1/4” | 1.1/4” | Øi 220 | 1.1/2” | 1“ | 1/2” | 1/2” | 1.1/4” | 1.1/4” | 3/4” |
| BST-1000+FL. | 32 x 1.1/4“ x 700 | 1“ | 1“ | 1“ | 1“ | 1.1/4” | 1.1/4” | Øi 220 | 1.1/2” | 1“ | 1/2” | 1/2” | 1.1/4” | 1.1/4” | 3/4” |
| BST-1500+FL. | 32 x 1.1/4“ x 670 | 1.1/4“ | 1.1/4“ | 1.1/4“ | 1.1/4“ | 1.1/4” | 1.1/4” | Øi 220 | 1.1/2” | 1.1/4“ | 1/2” | 1/2” | 1.1/4” | 3” | 1“ |
| BST-2000+FL. | 32 x 1.1/4“ x 670 | 1.1/4“ | 1.1/4“ | 1.1/4“ | 1.1/4“ | 1.1/4” | 1.1/4” | Øi 220 | 1.1/2” | 1.1/4“ | 1/2” | 1/2” | 1.1/4” | 3” | 1“ |

| MODEL | B mm | E mm | L mm | R mm | DN 5 |
|---|---|---|---|---|---|
| BST-1500+FL. | 750 | 1820 | 1445 | 895 | 1.1/4” |
| BST-2000+FL. | 740 | 1780 | 1455 | 885 | 1.1/4” |

## TECHNICAL CHARACTERISTICS

| MODEL | MAX WORKING PRESSURE CYLINDER (Secondary circuit) | MAX. WORKING PRESSURE HEAT EXCHANGER (Primary circuit) | HEAT EXCHANGERS PRESSURE DROP | |
|---|---|---|---|---|
| | | | LOWER HEAT EXCHANGER | UPPER HEAT EXCHANGER |
| BST 200 | 10 bar | 12 bar | 125 mbar | 65 mbar |
| BST 300 | | | 220 mbar | 100 mbar |
| BST 400 | | | 260 mbar | 120 mbar |
| BST 500 | | | 300 mbar | 120 mbar |
| BST 800 | | | 350 mbar | 200 mbar |
| BST 1000 | | | 400 mbar | 200 mbar |
| BST 1500 | 6 bar | | 600 mbar | 270 mbar |
| BST 2000 | | | 720 mbar | 350 mbar |

| MODEL | INSULATION TYPE | INSULATION THICKNESS | INSULATION DENSITY | INITIAL THERMAL CONDUCTIVITY | (*) INSULATION THERMAL LOSS | EXTERNAL COVER |
|---|---|---|---|---|---|---|
| BST 200 | 95% closed cells rigid expanded polyurethane, CFC - HCFC free | 50 mm | 40 kg/m$^3$ | 23,5 mW/m K | 0,98 kWh / 24h | Grey polystyrene RAL 9006 |
| BST 300 | | | | | 1,29 kWh / 24h | |
| BST 400 | | | | | 1,56 kWh / 24h | |
| BST 500 | | | | | 1,84 kWh / 24h | |
| BST 800 | | | | | 2,37 kWh / 24h | |
| BST 1000 | | | | | 2,71 kWh / 24h | |
| BST 1500 | Open cells flexible expanded polyurethane | 50 mm | 15 kg/m$^3$ | 39,0 mW/m K | 6,53 kWh / 24h | Skay bianco RAL 9001 |
| BST 2000 | | | | | 7,15 kWh / 24h | |

(*) Thermal loss calculated with an accumulation temperature equal to 60 °C and with an external temperature equal to 15 °C.

## STANDARD EQUIPMENT

• Anode tester (200 – 1000)

## SAFETY DEVICES

The cylinders must be protected from the effects of over pressure by installing:
· **SAFETY VALVE** calibrated to pressure lower than the max. cylinder pressure
· **SANITARY EXPANSION TANK** mod. ELBI **D - DV series**
· **SOLAR EXPANSION TANK mod. ELBI DS – DSV series**

### RECOMMENDED EXPANSION TANK

| MODEL | SANITARY CIRCUIT (mod. ELBI D-DV series) | LOWER COIL (mod. ELBI DS-DSV series) |
|---|---|---|
| BST 200 | D – 18 | DS – 18 |
| BST 300 | D – 24 | DS – 18 |
| BST 400 | D – 35 | DS – 24 |
| BST 500 | D – 35 | DS – 24 |
| BST 800 | DV – 50 | DS – 35 |
| BST 1000 | DV – 80 | DSV – 50 |
| BST 1500 | DV – 150 | DSV – 80 |
| BST 2000 | DV – 150 | DSV – 100 |

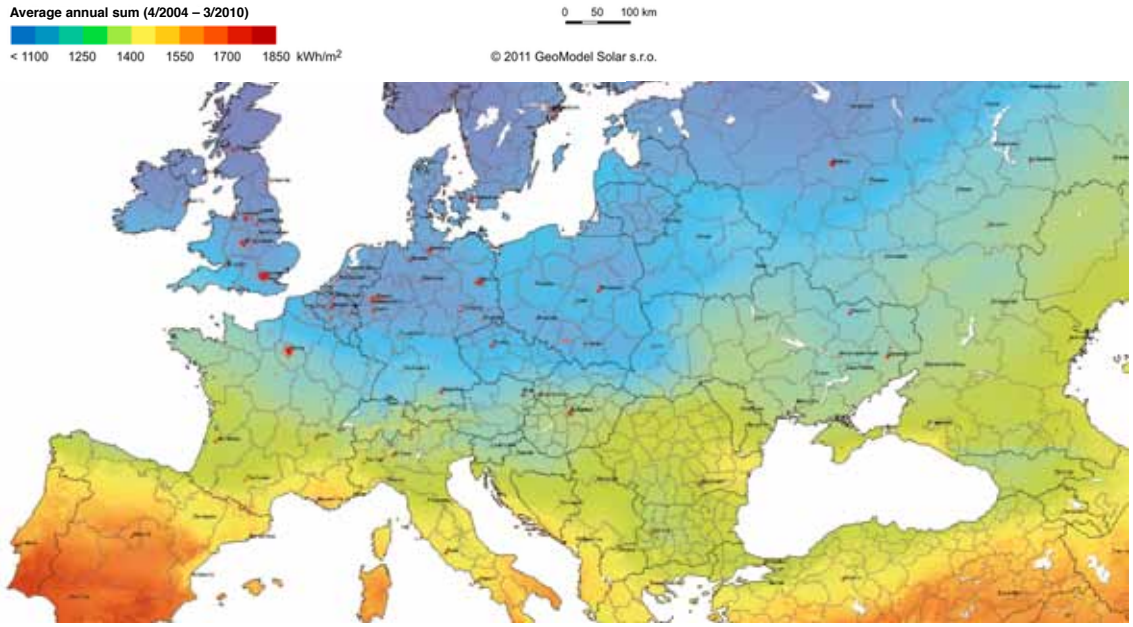
Dimensioning carried out with the following parameters: T. accumulation = 85 °C /T. inlet = 15 °C / P. pre-charge = 3 bar / P. max = 6 bar
*The recommended capacities must be verified on the basis of the actual dimensions of the system implemented.*

| MODEL | MAGNESIUM ANODE SUPPLIED | CATHODIC PROTECTION APPLICABLE |
|---|---|---|
| BST 200 | 1.1/4" x 350 / Cod.8560046 | Cathodic protection for cylinders 100/400 l. Code 8560170 |
| BST 300 | 1.1/4" x 350 / Cod.8560046 | |
| BST 400 | 1.1/4" x 550 / Cod.8560066 | |
| BST 500 | 1.1/4" x 700 / Cod.8560086 | Cathodic protection for cylinders 500/1000 l. Code 8560175 |
| BST 800 | 1.1/4" x 700 / Cod.8560086 | |
| BST 1000 | 1.1/4" x 700 / Cod.8560086 | |
| BST 1500 | n.2 x 1.1/4" x 670 / Cod. 8560070 | Cathodic protection for cylinders 1500/2500 l. Code 8560180 |
| BST 2000 | n.2 x 1.1/4" x 670 / Cod. 8560070 | |

**BST CYLINDERS ARE SELECTED BASED ON MULTIPLE FACTORS THAT CAN BE BRIEFLY SUMMARISED AS FOLLOWS:**

- **SANITARY HOT WATER REQUIRED**
- **SUNLIGHT**
- **CYLINDER CAPACITY FOR THE NUMBER OF PEOPLE**
- **SOLAR COLLECTOR SURFACE FOR CYLINDER CAPACITY**

**SOLAR LIGHT:**
**LEVEL OF SUNLIGHT PER YEAR IN EUROPE (kWh/m²)**




**CYLINDER MODELS PER NUMBER OF PEOPLE:**

| MODEL | Number of people |
|---|---|
| BST 200 | 1 - 2 |
| BST 300 | 2 - 4 |
| BST 400 | 3 - 5 |
| BST 500 | 5 - 7 |
| BST 800 | max. 10 |
| BST 1000 | max. 18 |
| BST 1500 | max. 22 |
| BST 2000 | max. 38 |

**SOLAR COLLECTOR SURFACE TO COMBINE WITH THE SELECTED MODEL:**

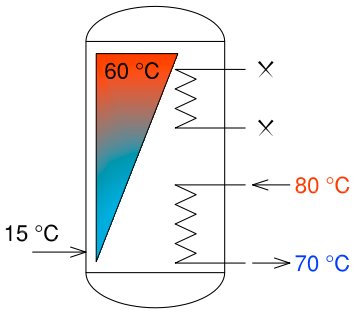
| MODEL | Solar collector surface (m²) |
|---|---|
| BST 200 | 2.5 |
| BST 300 | 5 |
| BST 400 | 7.5 |
| BST 500 | 10 |
| BST 800 | 12.5 |
| BST 1000 | 15 |
| BST 1500 | 17,5 |
| BST 2000 | 20 |

## TABLE OF HEATING ELEMENT APPLICABILITY TO CYLINDERS

| Heating element model* | | | | | Water heating time from 15° C to 60 °C (expressed in minutes) *The heating times outlined are approximate* | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| CODE | Power (kW) | Voltage (Volt) | Connection | Length (mm) | BST-200 | BST-300 | BST-400 | BST-500 | BST-800 | BST-1000 | BST-1500 | BST-2000 |
| 8601000 | 1 | 220 V / MF | G 1.1/4" | 295 | 630 min. | 960 min. | 1270 min. | 1580 min. | 2520 min. | 3150 min. | 4720 min. | 6300 min. |
| 8601650 | 1.65 | 220 V / MF | G 1.1/4" | 450 | 380 min. | 580 min. | 770 min. | 970 min. | 1550 min. | 1920 min. | 2870 min. | 3820 min. |
| 8602000 | 2 | 220 V / MF | G 1.1/4" | 515 | n.a. | n.a. | 640 min. | 800 min. | 1270 min. | 1580 min. | 2370 min. | 3150 min. |
| 8602600 | 2.6 | 220 V / MF | G 1.1/4" | 675 | n.a. | n.a. | n.a. | n.a. | 980 min. | 1230 min. | 1830 min. | 2450 min. |
| 8602601 | 2.6 | 220 V / MF | G 1.1/4" | 360 | 250 min. | 370 min. | 490 min. | 630 min. | 980 min. | 1220 min. | 1830 min. | 2450 min. |
| 8603300 | 3.3 | 220 V / MF | G 1.1/4" | 825 | n.a. | n.a. | n.a. | n.a. | n.a. | n.a. | 1450 min. | 1940 min. |
| 8603301 | 3.3 | 220 V / MF | G 1.1/4" | 435 | 200 min. | 295 min. | 390 min. | 490 min. | 780 min. | 980 min. | 1450 min. | 1940 min. |
| 8604001 | 4 | 220 V / MF | G 1.1/4" | 510 | n.a. | n.a. | 320 min. | 410 min. | 640 min. | 800 min. | 1200 min. | 1600 min. |
| 8705000 | 5 | 380 V / TF | G 1.1/2" | 445 | 140 min. | 200 min. | 260 min. | 330 min. | 520 min. | 640 min. | 950 min. | 1300 min. |
| 8706000 | 6 | 380 V / TF | G 1.1/2" | 510 | n.a. | n.a. | 220 min. | 280 min. | 430 min. | 540 min. | 800 min. | 1060 min. |
| 8708000 | 8 | 380 V / TF | G 1.1/2" | 670 | n.a. | n.a. | n.a. | n.a. | 330 min. | 420 min. | 610 min. | 800 min. |
| 8710000 | 10 | 380 V / TF | G 1.1/2" | 820 | n.a. | n.a. | n.a. | n.a. | n.a. | n.a. | 490 min. | 640 min |
| 8712000 | 12 | 380 V / TF | G 1.1/2" | 970 | n.a. | n.a. | n.a. | n.a. | n.a. | n.a. | 410 min. | 540 min |

n.a.= Heating element not applicable

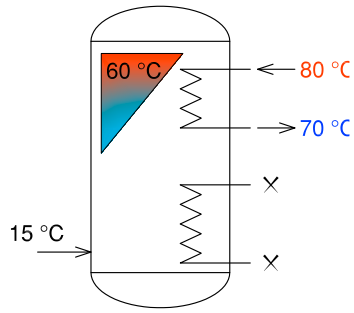
**ACCUMULATION AT 60 °C**
**HEAT EXCHANGER:** T.inlet = 80°C; ΔT = 10°C.
**STORAGE WATER HEATER:** T.inlet =15°C; T.accumulation= 60°C




| MODEL | THERMAL POWER [kW] | PUMP CAPACITY [l/hour] | HEATING TIME(1) [min] | PRODUCTION DHW AT 60°C [l/hour] | QUANTITY DHW AT 45°C FOR FIRST 10 min. (2) [l] |
|---|---|---|---|---|---|
| BST 200 | 16,50 | 1450 | 38 | 315 | 195 |
| BST 300 | 29,00 | 2600 | 31 | 554 | 310 |
| BST 400 | 34,50 | 3000 | 38 | 659 | 395 |
| BST 500 | 44,00 | 3850 | 35 | 840 | 495 |
| BST 800 | 50,00 | 4400 | 49 | 955 | 668 |
| BST 1000 | 60,00 | 5300 | 47 | 1145 | 770 |
| BST 1500 | 79,00 | 6900 | 60 | 1500 | 1040 |
| BST 2000 | 93,00 | 8200 | 67 | 1800 | 1300 |

(1) Time required to bring the temperature of the cylinder from 15 °C to 60 °C
(2) Quantity of DHW (Sanitary Hot Water) at 45°C available in first 10 minutes with accumulation of DHW at 60° C.

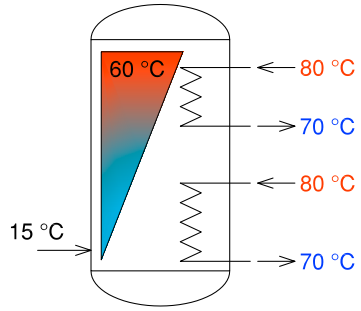
**ACCUMULATION AT 60 °C**
**HEAT EXCHANGER:** T.inlet = 80°C; ΔT = 10°C.
**STORAGE WATER HEATER:** T.inlet =15°C; T.accumulation= 60°C




| MODEL | THERMAL POWER [kW] | PUMP CAPACITY [l/hour] | HEATING TIME(1) [min] | PPRODUCTION DHW AT 60°C [l/hour] |
|---|---|---|---|---|
| BST 200 | 11,50 | 1000 | 24 | 220 |
| BST 300 | 18,00 | 1500 | 22 | 340 |
| BST 400 | 21,00 | 1850 | 28 | 400 |
| BST 500 | 21,00 | 1850 | 32 | 400 |
| BST 800 | 29,00 | 2500 | 35 | 550 |
| BST 1000 | 29,00 | 2500 | 37 | 550 |
| BST 1500 | 35,00 | 3100 | 36 | 675 |
| BST 2000 | 46,70 | 4100 | 44 | 890 |

(1) Time required to bring the temperature of the upper part of the cylinder (about 1/3 of the total volume) from 15 °C to 60 °C.

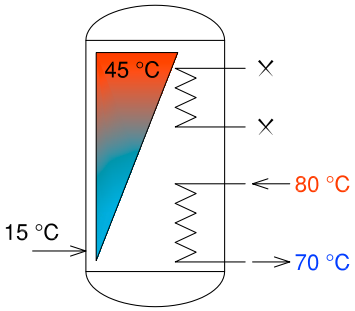
**ACCUMULATION AT 60 °C**
**HEAT EXCHANGER**: T.inlet = 80°C; ΔT = 10°C.
**STORAGE WATER HEATER:** T.inlet =15°C; T.accumulation= 60°C




| MODEL | THERMAL POWER [kW] | UPPER PUMP CAPACITY [l/hour] | LOWER PUMP CAPACITY [l/hour] | HEATING TIME(1) [min] | PRODUCTION DHW AT 60°C [l/hour] |
|---|---|---|---|---|---|
| BST 200 | 28,00 | 1000 | 1450 | 22 | 530 |
| BST 300 | 47,00 | 1500 | 2600 | 20 | 890 |
| BST 400 | 55,50 | 1850 | 3000 | 23 | 1050 |
| BST 500 | 65,00 | 1850 | 3850 | 24 | 1240 |
| BST 800 | 79,00 | 2500 | 4400 | 32 | 1500 |
| BST 1000 | 89,00 | 2500 | 5300 | 35 | 1700 |
| BST 1500 | 114,00 | 3100 | 6900 | 41 | 2170 |
| BST 2000 | 139,70 | 4100 | 8200 | 45 | 2670 |

(1) Time required to bring cylinder temperature from 15 °C to 60°C

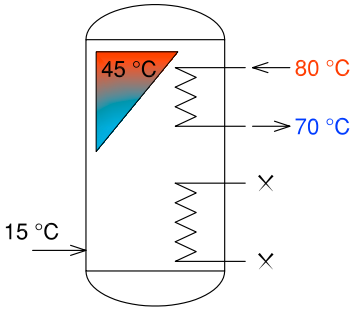
**ACCUMULATION AT 45 °C**
**HEAT EXCHANGER:** T.inlet = 80°C; ΔT = 10°C.
**STORAGE WATER HEATER:** T.inlet =15°C; T.accumulation= 45°C




| MODEL | THERMAL POWER [kW] | PUMP CAPACITY [l/hour] | HEATING TIME(1) [min] | PRODUCTION DHW AT 45°C [l/hour] |
|---|---|---|---|---|
| BST 200 | 20,00 | 1760 | 21 | 570 |
| BST 300 | 35,00 | 3000 | 18 | 1000 |
| BST 400 | 40,00 | 3500 | 22 | 1140 |
| BST 500 | 53,00 | 4670 | 20 | 1500 |
| BST 800 | 59,50 | 5200 | 28 | 1700 |
| BST 1000 | 68,50 | 6000 | 28 | 1960 |
| BST 1500 | 95,00 | 8300 | 33 | 2700 |
| BST 2000 | 112,00 | 9850 | 37 | 3200 |

(1) Time required to bring the temperature of the cylinder from 15 °C to 45 °C

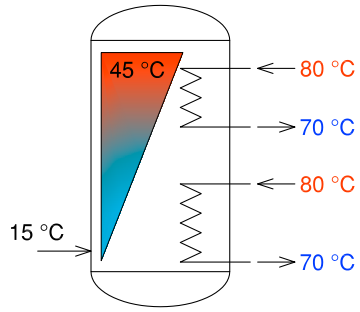
**ACCUMULATION AT 45 °C**
**HEAT EXCHANGER:** T.inlet = 80°C; ΔT = 10°C.
**STORAGE WATER HEATER:** T.inlet =15°C; T.accumulation= 45°C




| MODEL | THERMAL POWER [kW] | PUMP CAPACITY [l/hour] | HEATING TIME(1) [min] | PRODUCTION DHW AT 45°C [l/hour] |
|---|---|---|---|---|
| BST 200 | 14,00 | 1230 | 14 | 400 |
| BST 300 | 21,50 | 1840 | 13 | 610 |
| BST 400 | 26,00 | 2230 | 16 | 740 |
| BST 500 | 26,00 | 2230 | 18 | 740 |
| BST 800 | 36,00 | 3170 | 19 | 1020 |
| BST 1000 | 36,00 | 3170 | 20 | 1020 |
| BST 1500 | 42,00 | 3700 | 20 | 1210 |
| BST 2000 | 56,00 | 4900 | 24 | 1600 |

(1) Time required to bring the temperature of the upper part of the cylinder (about 1/3 of the total volume) from 15 °C to 45 °C.

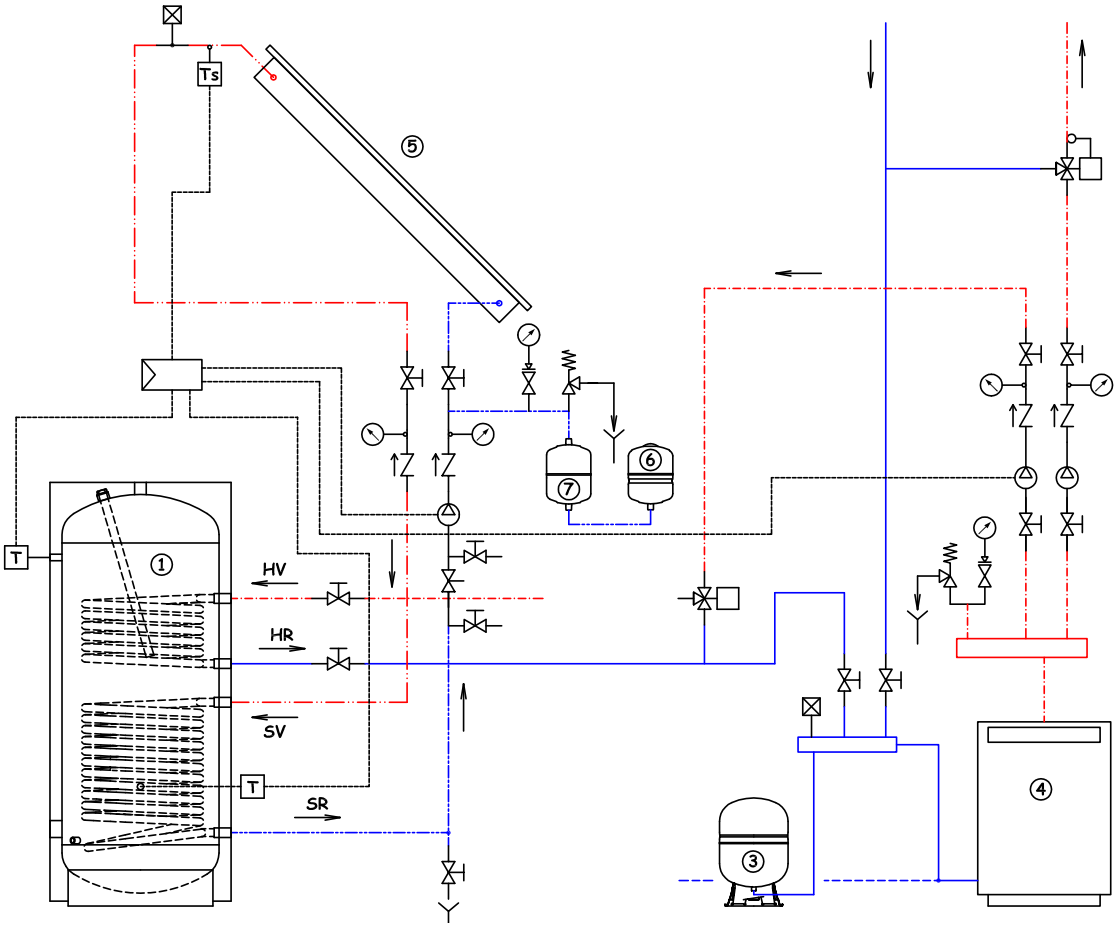
**ACCUMULATION AT 45 °C**
**HEAT EXCHANGER:** T.inlet = 80°C; ΔT = 10°C.
**STORAGE WATER HEATER:** T.inlet =15°C; T.accumulation= 45°C




| MODELLO | THERMAL POWER [kW] | UPPER PUMP CAPACITY [l/hour] | LOWER PUMP CAPACITY [l/hour] | HEATING TIME(1) [min] | PRODUCTION DHW AT 45°C [l/hour] |
|---|---|---|---|---|---|
| BST 200 | 34,00 | 1760 | 1230 | 12 | 970 |
| BST 300 | 56,50 | 3000 | 1840 | 11 | 1580 |
| BST 400 | 66,00 | 3500 | 2230 | 13 | 1870 |
| BST 500 | 79,00 | 4670 | 2230 | 13 | 2250 |
| BST 800 | 95,50 | 5200 | 3170 | 18 | 2730 |
| BST 1000 | 104,50 | 6000 | 3170 | 20 | 2990 |
| BST 1500 | 137,00 | 8300 | 3700 | 23 | 3920 |
| BST 2000 | 168,00 | 9850 | 4900 | 25 | 4810 |

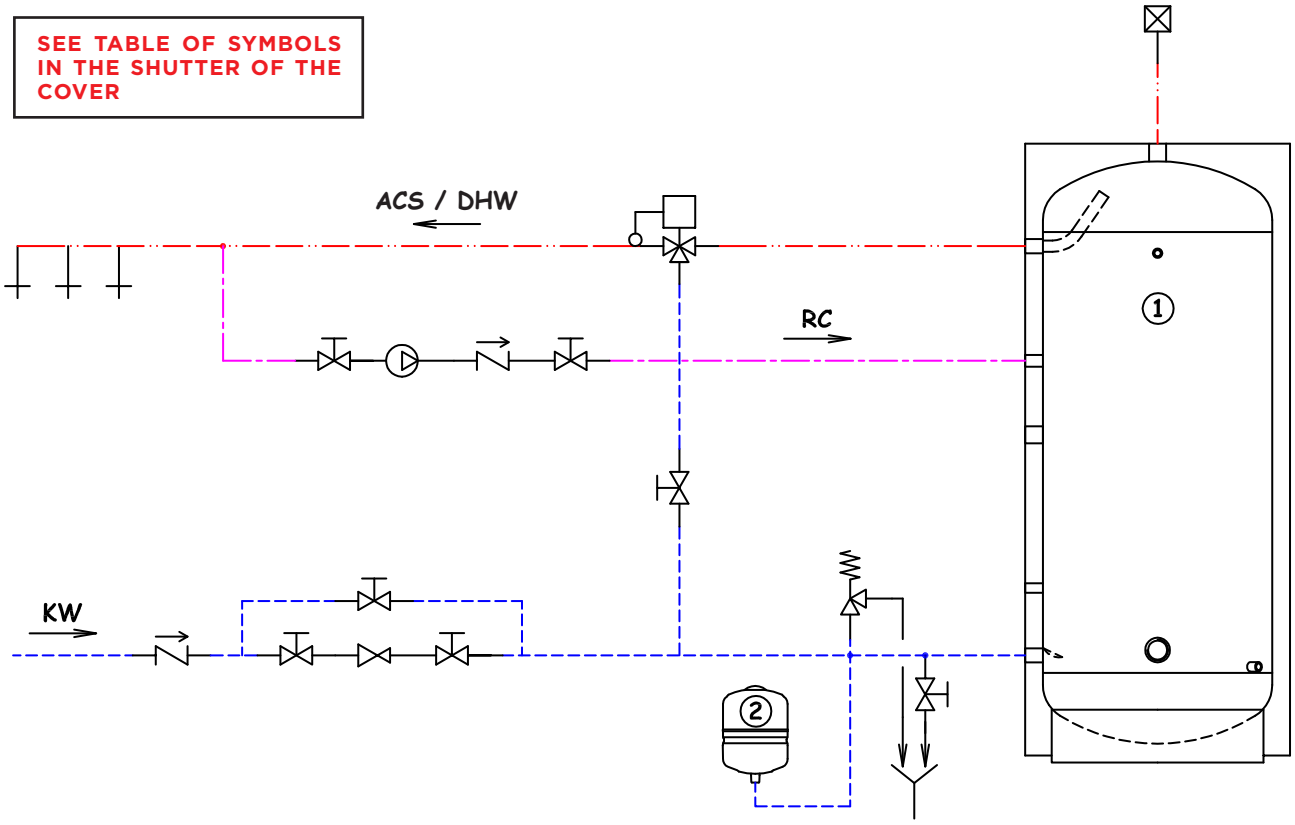
(1) Time required to bring cylinder temperature from 15 °C to 45°C

## HYDRAULIC DIAGRAM 1 (BST CYLINDER WITH SOLAR CIRCUIT AND INTEGRATION)




## HYDRAULIC DIAGRAM 2 (BST CYLINDER WITH SANITARY CIRCUIT)

SEE TABLE OF SYMBOLS IN THE SHUTTER OF THE COVER

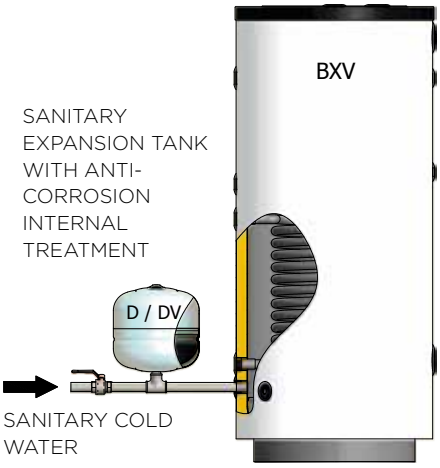


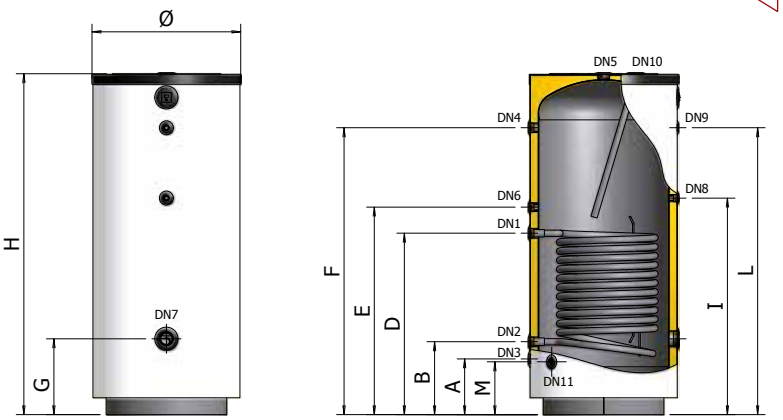
# BXV

## STAINLESS STEEL CYLINDER

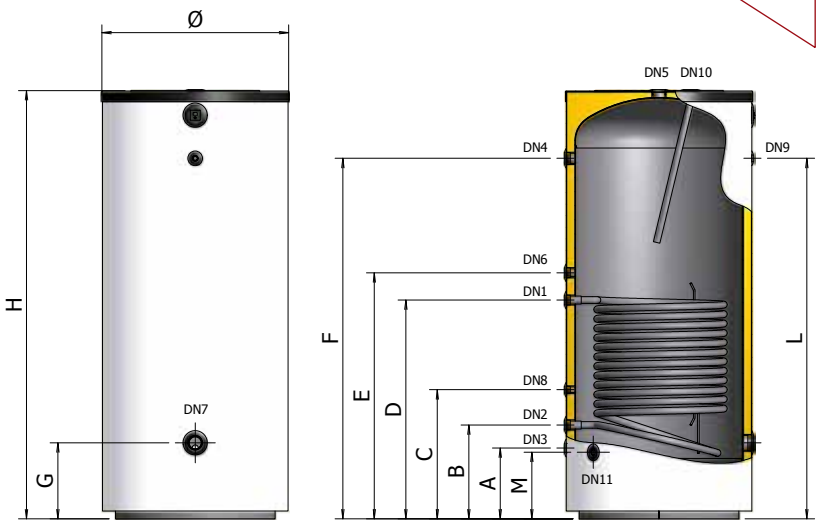
WITH FIXED EXCHANGER FOR SANITARY HOT WATER (200 - 1000 LITRES)

### BXV 200 - 300 - 500




### BXV 800 - 1000




**KEYWORD**

**DN1:** Primary fluid inlet, heat exchanger side; **DN2:** Primary fluid outlet, heat exchanger side; **DN3:** Sanitary cold water inlet; **DN4:** Sanitary hot water outlet; **DN5:** Sanitary hot water outlet; **DN6:** Recirculation; **DN7:** Heating element / Visual indicator light; **DN8:** Probe; **DN9:** Thermometer; **DN10:** Magnesium anode; **DN11:** Drainage

- CYLINDER
- FOR SANITARY HOT WATER
- SUITABLE FOR SOLAR SYSTEMS
- ANODE WITH TESTER
- STAINLESS STEEL AISI 316 L CASING
- POLYURETHANE INSULATION
- EXCHANGER IN STAINLESS STEEL AISI 316 L

+ 95°C
CYLINDER MAX TEMPERATURE

+ 110°C
MAX TEMPERATURE OF EXCHANGER

$P_{MAX}$ 10 bar
MAX WORKING PRESSURE

$P_{SCA}$ 12 bar
MAX PRESSURE OF EXCHANGER

**WARRANTY: 5 YEARS**

**REFERENCE STANDARDS**

**CYLINDER:**

Directive PED 97/23/EC – ART. 3.3, without CE marking
Standard EN 12897:2006

**INSULATION:**

Expanded polyurethane without CFC and HCFC

**HEAT EXCHANGER:**

fixed single-tube coil in stainless steel AISI 316 L

**INSTALLATION:**

· traditional boilers (wall-hung and/or floor-standing)
· condensing boilers
· solar thermal systems

| MODEL | CODE | | HEAT EXCHANGER STAINLESS STEEL | | | | NOTES |
|---|---|---|---|---|---|---|---|
| | | LITRES | m² | LITRES | mm | mm | |
| BXV-200 | A3X0L47 PGP40 | 200 | 0,70 | 5 | 600 | 1170 | |
| BXV-300 | A3X0L51 PGP40 | 300 | 1,20 | 7 | 650 | 1395 | |
| BXV-500 | A3X0L55 PGP40 | 500 | 1,80 | 9 | 750 | 1445 | |
| BXV-800 | A3X0L60 PGP40 | 800 | 2,00 | 13 | 750 | 1695 | |
| BXV 1000 | A3X0L62 PGP40 | 1000 | 2,40 | 15 | 900 | 1795 | |

| MODEL | A mm | B mm | C mm | D mm | E mm | F mm | G mm | I mm | L mm | M mm |
|---|---|---|---|---|---|---|---|---|---|---|
| BXV-200 | 235 | 320 | / | 670 | 765 | 935 | 275 | 785 | 935 | 220 |
| BXV-300 | 255 | 340 | / | 795 | 895 | 1155 | 355 | 955 | 1155 | 240 |
| BXV-500 | 280 | 365 | / | 905 | 1035 | 1430 | 380 | 1080 | 1430 | 265 |
| BXV-800 | 340 | 450 | 620 | 910 | 1040 | 1470 | 365 | / | 1470 | 320 |
| BXV 1000 | 340 | 450 | 620 | 1045 | 1175 | 1720 | 365 | / | 1720 | 320 |

| MODEL | ANODE ø x ø conn. x L | DN 1 | DN 2 | DN 3 | DN 4 | DN 5 | DN 6 | DN 7 | DN 8 | DN 9 | DN 10 | DN 11 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| BXV-200 | 32 x 1.1/4“ x 350 | 1“ | 1“ | 1“ | 1“ | 1.1/4” | 3/4” | 2” | 1/2” | 1/2” | 1.1/4” | 1/2” |
| BXV-300 | 32 x 1.1/4“ x 550 | 1“ | 1“ | 1“ | 1“ | 1.1/4” | 3/4” | 2” | 1/2” | 1/2” | 1.1/4” | 1/2” |
| BXV-500 | 32 x 1.1/4“ x 700 | 1“ | 1“ | 1“ | 1“ | 1.1/4” | 3/4” | 2” | 1/2” | 1/2” | 1.1/4” | 1/2” |
| BXV-800 | 32 x 1.1/4“ x 700 | 1“ | 1“ | 1“ | 1.1/4” | 1.1/4” | 1“ | 2” | 1/2” | 1/2” | 1.1/4” | 3/4” |
| BXV 1000 | 32 x 1.1/4“ x 700 | 1“ | 1“ | 1“ | 1.1/4” | 1.1/4” | 1“ | 2” | 1/2” | 1/2” | 1.1/4” | 3/4” |

## TECHNICAL CHARACTERISTICS

| MODEL | MAX WORKING PRESSURE CYLINDER (Secondary circuit) | MAX. WORKING PRESSURE HEAT EXCHANGER (Primary circuit) | HEAT EXCHANGER PRESSURE DROP |
|---|---|---|---|
| BXV-200 | 10 bar | 12 bar | 110 mbar |
| BXV-300 | | | 200 mbar |
| BXV-500 | | | 270 mbar |
| BXV-800 | | | 350 mbar |
| BXV 1000 | | | 400 mbar |

| MODEL | INSULATION TYPE | INSULATION THICKNESS | INSULATION DENSITY | INITIAL THERMAL CONDUCTIVITY | (*) INSULATION THERMAL LOSS | EXTERNAL COVER |
|---|---|---|---|---|---|---|
| BXV-200 | 95% closed cells rigid expanded polyurethane, CFC - HCFC free | 50 mm | 40 kg/m³ | 23,5 mW/m K | 0,98 kWh / 24h | Grey polystyrene RAL 9006 |
| BXV-300 | | | | | 1,29 kWh / 24h | |
| BXV-500 | | | | | 1,84 kWh / 24h | |
| BXV-800 | | | | | 2,37 kWh / 24h | |
| BXV 1000 | | | | | 2,71 kWh / 24h | |

(*) Thermal loss calculated with an accumulation temperature equal to 60 °C and with an external temperature equal to 15 °C.

## STANDARD EQUIPMENT

- Anode tester

## SAFETY DEVICES

The cylinders must be protected from the effects of over pressure by installing:
· A **SAFETY VALVE** calibrated to a pressure lower than the max. pressure of the cylinder;
· A **SANITARY EXPANSION TANK** model ELBI **D – DV series**

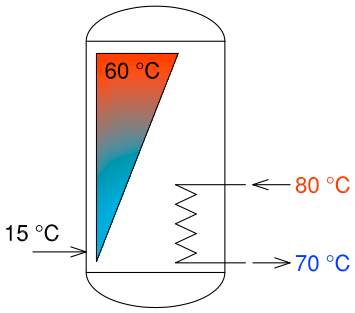
| MODEL | RECOMMENDED SANITARY EXPANSION TANK (mod. ELBI D-DV series) |
|---|---|
| BXV-200 | D - 18 |
| BXV-300 | D - 24 |
| BXV-500 | D - 35 |
| BXV-800 | D - 50 |
| BXV 1000 | D - 80 |

Tank sized using the following parameters: T. accumulation= 85 °C / T. inlet = 15 °C / Pre-charge pressure = 3 bar / Max pressure = 6 bar
*The recommended capacity must be verified on the basis of the actual dimensions of the system implemented*

| MODEL | MAGNESIUM ANODE SUPPLIED | CATHODIC PROTECTION APPLICABLE |
|---|---|---|
| BXV-200 | 1.1/4" x 350 / Cod.8560046 | Cathodic protection with cylinders 100/300 l. Code 8560170 |
| BXV-300 | 1.1/4" x 550 / Cod.8560046 | |
| BXV-500 | 1.1/4" x 700 / Cod.8560046 | Cathodic protection with cylinders 500/1000 l. Code 8560175 |
| BXV-800 | 1.1/4" x 700 / Cod.8560046 | |
| BXV 1000 | 1.1/4" x 700 / Cod.8560046 | |

## THERMAL YIELD

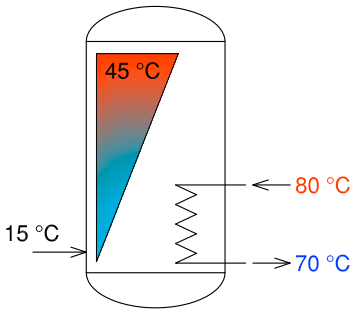
**ACCUMULATION AT 60 °C**
**HEAT EXCHANGER:** T.inlet = 80°C; ΔT = 10°C.
**STORAGE WATER HEATER:** T.inlet =15°C; T.accumulation= 60°C




| MODEL | THERMAL POWER [kW] | PUMP CAPACITY [l/hour] | HEATING TIME(1) [min] | PRODUCTION DHW AT 60°C [l/hour] | QUANTITY DHW AT 60°C FOR FIRST 10 min. (2) [l] |
|---|---|---|---|---|---|
| BXV-200 | 19,50 | 1720 | 34 | 373 | 224 |
| BXV-300 | 25,90 | 2290 | 34 | 495 | 300 |
| BXV-500 | 33,00 | 2900 | 47 | 630 | 449 |
| BXV-800 | 50,00 | 4400 | 49 | 955 | 668 |
| BXV 1000 | 60,00 | 5300 | 47 | 1140 | 770 |

(1) Time required to bring the temperature of the cylinder from 15 °C to 60 °C.
(2) Quantity of DHW (Sanitary Hot Water) at 45°C available in the first 10 minutes with DHW accumulation at 60° C.

**ACCUMULATION AT 45 °C**
**HEAT EXCHANGER:** T.inlet = 80°C; ΔT = 10°C.
**STORAGE WATER HEATER:** T.inlet =15°C; T.accumulation= 45°C




| MODEL CYLINDER | THERMAL POWER [kW] | PUMP CAPACITY [l/hour] | HEATING TIME(1) [min] | PPRODUCTION DHW AT 45°C [l/hour] |
|---|---|---|---|---|
| BXV-200 | 25,00 | 2200 | 18 | 715 |
| BXV-300 | 33,00 | 2900 | 18 | 945 |
| BXV-500 | 43,00 | 3800 | 24 | 1230 |
| BXV-800 | 59,50 | 5200 | 28 | 1700 |
| BXV 1000 | 68,50 | 6000 | 27 | 1960 |

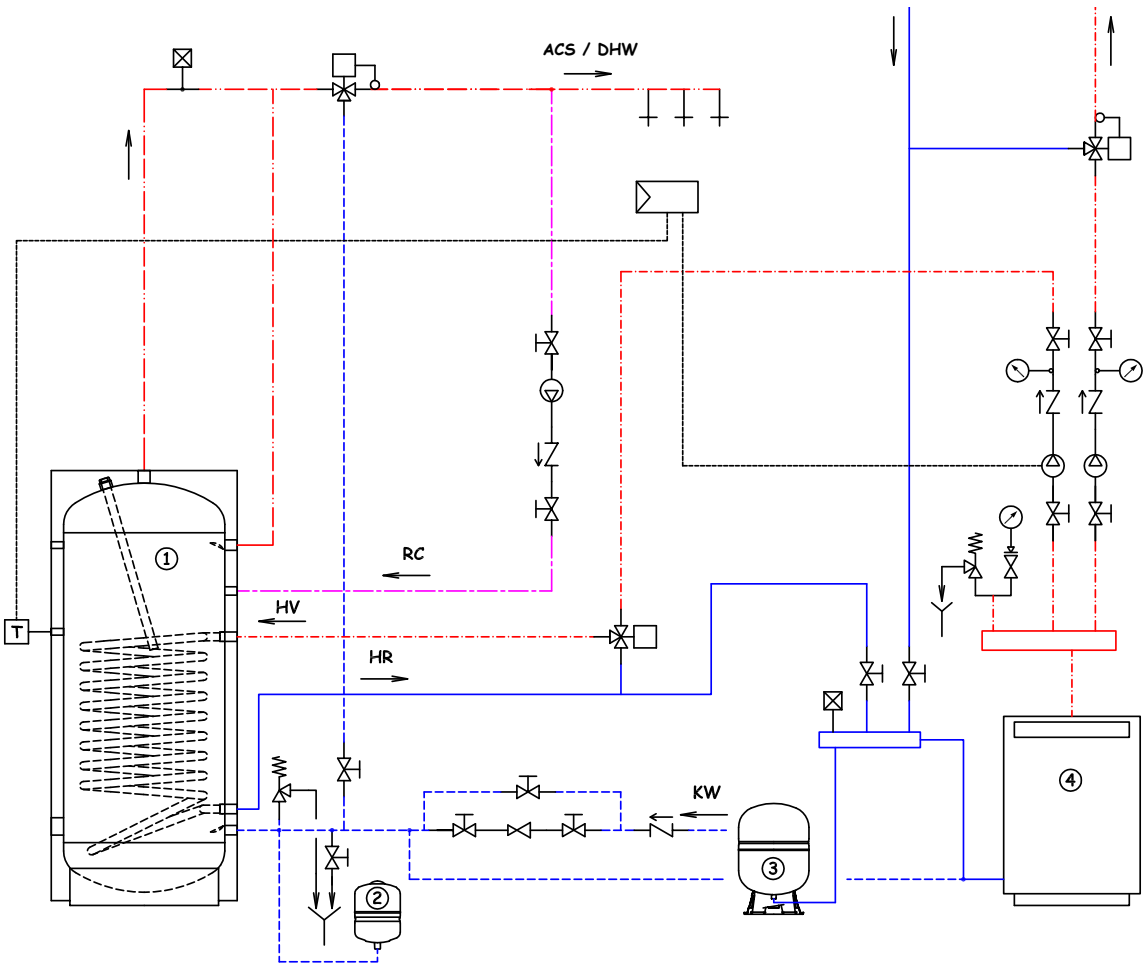
(1) Time required to bring the temperature of the cylinder from 15 °C to 45 °C.

## TABLE OF HEATING ELEMENT APPLICABILITY TO CYLINDERS

| Heating element model* | | | | | Water heating time from 15° C to 60 °C (expressed in minutes) *The heating times outlined are approximate* | | | | |
|---|---|---|---|---|---|---|---|---|---|
| CODE | Power (kW) | Voltage (Volt) | Connection | Length (mm) | BXV-200 | BXV-300 | BXV-500 | BXV-800 | BXV-1000 |
| 8601000 | 1 | 220 V / MF | G 1.1/4" | 295 | 480 min. | 630 min. | 960 min. | 1270 min. | 3150 min. |
| 8601650 | 1.65 | 220 V / MF | G 1.1/4" | 450 | 285 min. | 380 min. | 580 min. | 770 min. | 1920 min. |
| 8602000 | 2 | 220 V / MF | G 1.1/4" | 515 | n.a. | n.a. | n.a. | 640 min. | 1580 min. |
| 8602600 | 2.6 | 220 V / MF | G 1.1/4" | 675 | n.a. | n.a. | n.a. | n.a. | 1230 min. |
| 8602601 | 2.6 | 220 V / MF | G 1.1/4" | 360 | 180 min. | 250 min. | 370 min. | 490 min. | 1230 min. |
| 8603300 | 3.3 | 220 V / MF | G 1.1/4" | 825 | n.a. | n.a. | n.a. | n.a. | n.a. |
| 8603301 | 3.3 | 220 V / MF | G 1.1/4" | 435 | 145 min. | 200 min. | 295 min. | 390 min. | 980 min. |
| 8604001 | 4 | 220 V / MF | G 1.1/4" | 510 | n.a. | n.a. | n.a. | 320 min. | 800 min. |
| 8705000 | 5 | 380 V / TF | G 1.1/2" | 445 | 95 min. | 140 min. | 200 min. | 260 min. | 640 min. |
| 8706000 | 6 | 380 V / TF | G 1.1/2" | 510 | n.a. | n.a. | n.a. | 220 min. | 540 min. |
| 8708000 | 8 | 380 V / TF | G 1.1/2" | 670 | n.a. | n.a. | n.a. | n.a. | 420 min. |
| 8710000 | 10 | 380 V / TF | G 1.1/2" | 820 | n.a. | n.a. | n.a. | n.a. | n.a. |
| 8712000 | 12 | 380 V / TF | G 1.1/2" | 970 | n.a. | n.a. | n.a. | n.a. | n.a. |

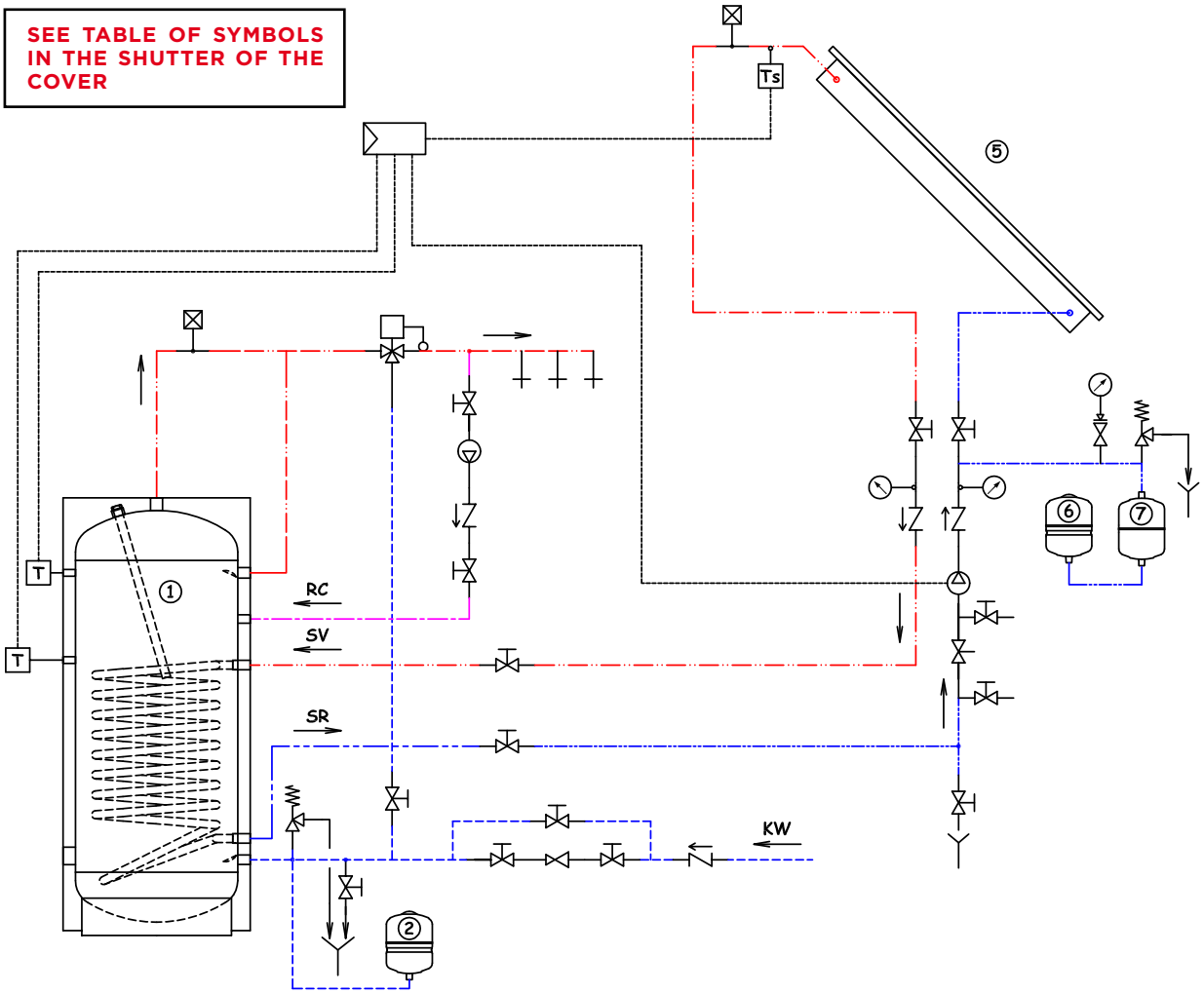
n.a.= Heating element not applicable

## HYDRAULIC DIAGRAM 1 (BXV CYLINDER WITH BOILER)




## HYDRAULIC DIAGRAM 2 (BXV CYLINDER WITH SOLAR COLLECTOR)

**SEE TABLE OF SYMBOLS IN THE SHUTTER OF THE COVER**

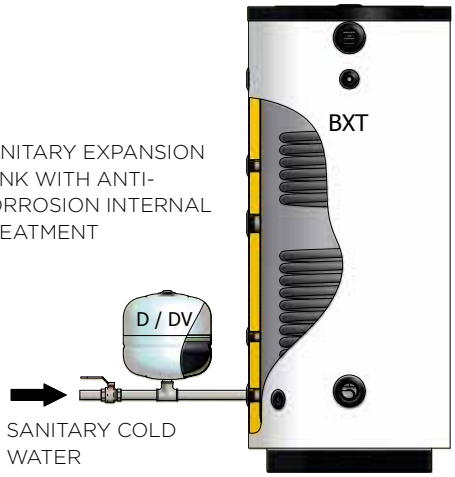


# BXT

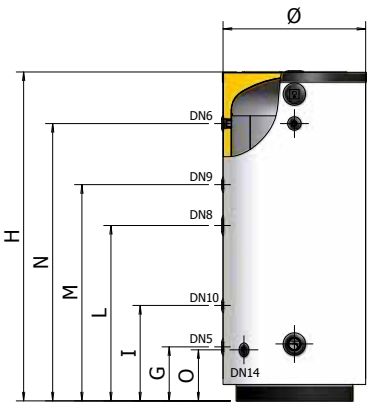
## STAINLESS STEEL CYLINDERS FOR SOLAR THERMAL USE

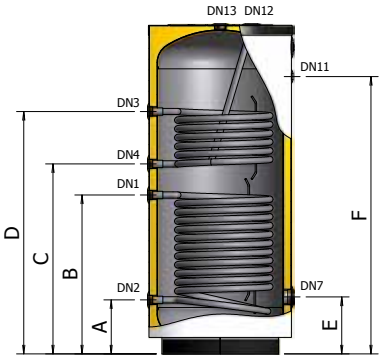
WITH TWO FIXED EXCHANGERS (200 – 1.000 LITRES)

SANITARY EXPANSION TANK WITH ANTI-CORROSION INTERNAL TREATMENT

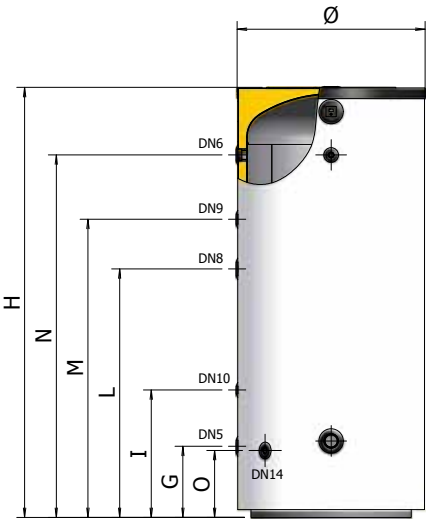


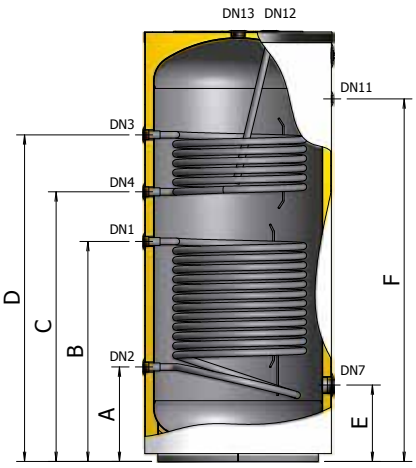

### BXT 200 - 300 - 500




### BXT 800 - 1000




**KEYWORD**

**DN1:** Solar exchanger inlet; **DN2:** Solar exchanger outlet; **DN3:** Boiler exchanger inlet; **DN4:** Boiler exchanger inlet; **DN5:** Sanitary cold water inlet; **DN6:** Sanitary cold water outlet; **DN7:** Heating element / Visual indicator light **DN8:** Heating element; **DN9:** Recirculation; DN10: Thermostat; **DN11:** Thermometer; **DN12:** Magnesium anode; **DN13:** Sanitary hot water outlet; **DN14:** Drainage

- CYLINDER
- FOR SANITARY HOT WATER
- SUITABLE FOR SOLAR SYSTEMS
- ANODE WITH TESTER
- STAINLESS STEEL AISI 316 L CASING
- POLYURETHANE INSULATION
- EXCHANGER IN STAINLESS STEEL AISI 316 L

+ 95°C
CYLINDER MAX TEMPERATURE

+ 110°C
MAX TEMPERATURE OF EXCHANGER

$P_{MAX}$ 10 bar
MAX WORKING PRESSURE

$P_{SCA}$ 12 bar
MAX PRESSURE OF EXCHANGER

**WARRANTY: 5 YEARS**

**REFERENCE STANDARDS**
**CYLINDER:**
Directive PED 97/23/EC – ART. 3.3, without CE marking
Standard EN 12897:2006

**INSULATION:**
Expanded polyurethane without CFC and HCFC.

**HEAT EXCHANGER:**
fixed double coil in stainless steel AISI 316 L

**INSTALLATION:**
· traditional boilers (wall-hung and/or floor-standing)
· condensing boilers
· solar thermal systems

| MODEL | CODE | | STAINLESS STEEL EXCHANGER | | | | | | NOTES |
|---|---|---|---|---|---|---|---|---|---|
| | | | LOWER | | UPPER | | | | |
| | | LITRES | m² | LITRES | m² | LITRES | mm | mm | |
| BXT-200 | A3Y0L47 PGP40 | 200 | 0,70 | 5 | 0,50 | 4 | 600 | 1170 | |
| BXT-300 | A3Y0L51 PGP40 | 300 | 1,20 | 8 | 0,75 | 5 | 650 | 1395 | |
| BXT-500 | A3Y0L55 PGP40 | 500 | 1,80 | 12 | 0,90 | 6 | 750 | 1695 | |
| BXT-800 | A3Y0L60 PGP40 | 800 | 2,00 | 13 | 1,20 | 8 | 900 | 1795 | |
| BXT-1000 | A3Y0L62 PGP40 | 1000 | 2,40 | 15 | 1,20 | 8 | 900 | 2045 | |

| MODEL | A mm | B mm | C mm | D mm | E mm | F mm | G mm | I mm | L mm | M mm | N mm | O mm |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| BXT-200 | 235 | 585 | 680 | 930 | 250 | 935 | 235 | 350 | 635 | 765 | 935 | 220 |
| BXT-300 | 255 | 710 | 815 | 1085 | 270 | 1155 | 255 | 405 | 760 | 950 | 1155 | 240 |
| BXT-500 | 280 | 820 | 980 | 1250 | 295 | 1430 | 280 | 495 | 905 | 1115 | 1430 | 265 |
| BXT-800 | 450 | 910 | 1060 | 1330 | 365 | 1470 | 340 | 610 | 985 | 1195 | 1470 | 320 |
| BXT-1000 | 450 | 1045 | 1280 | 1550 | 365 | 1720 | 340 | 610 | 1180 | 1415 | 1720 | 320 |

| MODEL | ANODE ø x ø conn. x L | DN 1 | DN 2 | DN 3 | DN 4 | DN 5 | DN 6 | DN 7 | DN 8 | DN 9 | DN 10 | DN 11 | DN 12 | DN 13 | DN 14 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| BXT-200 | 32 x 1.1/4“ x 350 | 1“ | 1“ | 1“ | 1“ | 1“ | 1“ | 2” | 1.1/2” | 3/4” | 1/2” | 1/2” | 1.1/4” | 1.1/4” | 1/2” |
| BXT-300 | 32 x 1.1/4“ x 550 | 1“ | 1“ | 1“ | 1“ | 1“ | 1“ | 2” | 1.1/2” | 3/4” | 1/2” | 1/2” | 1.1/4” | 1.1/4” | 1/2” |
| BXT-500 | 32 x 1.1/4“ x 700 | 1“ | 1“ | 1“ | 1“ | 1“ | 1“ | 2” | 1.1/2” | 3/4” | 1/2” | 1/2” | 1.1/4” | 1.1/4” | 1/2” |
| BXT-800 | 32 x 1.1/4“ x 700 | 1“ | 1“ | 1“ | 1“ | 1.1/4” | 1.1/4” | 2” | 1.1/2” | 1“ | 1/2” | 1/2” | 1.1/4” | 1.1/4” | 3/4” |
| BXT-1000 | 32 x 1.1/4“ x 700 | 1“ | 1“ | 1“ | 1“ | 1.1/4” | 1.1/4” | 2” | 1.1/2” | 1“ | 1/2” | 1/2” | 1.1/4” | 1.1/4” | 3/4” |

## TECHNICAL CHARACTERISTICS

| MODEL | MAX WORKING PRESSURE CYLINDER (Secondary circuit) | MAX. WORKING PRESSURE HEAT EXCHANGER (Primary circuit) | HEAT EXCHANGER PRESSURE DROP | |
|---|---|---|---|---|
| | | | LOWER EXCHANGER | UPPER EXCHANGER |
| BXT 200 | 10 bar | 12 bar | 125 mbar | 65 mbar |
| BXT 300 | | | 220 mbar | 100 mbar |
| BXT 500 | | | 300 mbar | 120 mbar |
| BXT 800 | | | 350 mbar | 200 mbar |
| BXT 1000 | | | 400 mbar | 200 mbar |

| MODEL | INSULATION TYPE | INSULATION THICKNESS | INSULATION DENSITY | INITIAL THERMAL CONDUCTIVITY | (*) INSULATION THERMAL LOSS | EXTERNAL COVER |
|---|---|---|---|---|---|---|
| BXT 200 | 95% closed cells rigid expanded polyurethane, CFC - HCFC free | 50 mm | 40 kg/m³ | 23,5 mW/m K | 0,98 kWh / 24h | Grey polystyrene RAL 9006 |
| BXT 300 | | | | | 1,29 kWh / 24h | |
| BXT 500 | | | | | 1,84 kWh / 24h | |
| BXT 800 | | | | | 2,37 kWh / 24h | |
| BXT 1000 | | | | | 2,71 kWh / 24h | |

(*) Thermal loss calculated with an accumulation temperature equal to 60 °C and with an external temperature equal to 15 °C.

## STANDARD EQUIPMENT

- Anode tester

## SAFETY DEVICES

The cylinders must be protected from the effects of over pressure by installing:
· A **SAFETY VALVE** calibrated to a pressure lower than the max. pressure of the cylinder;
· A **SANITARY EXPANSION TANK** model ELBI **D – DV series**
· A **SOLAR EXPANSION TANK** model ELBI **DS – DSV series**

| MODEL | RECOMMENDED EXPANSION TANK | |
|---|---|---|
| | SANITARY CIRCUIT (mod. ELBI D-DV series) | LOWER COIL (mod. ELBI DS-DSV series) |
| BXT 200 | D – 18 | DS – 18 |
| BXT 300 | D – 24 | DS – 18 |
| BXT 500 | D – 35 | DS – 24 |
| BXT 800 | D – 50 | DS – 35 |
| BXT 1000 | D – 80 | DSV – 50 |

Sized using the following parameters: T. accumulation= 85 °C / T. inlet = 15 °C / Pre-charge pressure = 3 bar / Max pressure = 6 bar
*The recommended capacity must be verified on the basis of the actual dimensions of the system implemented*

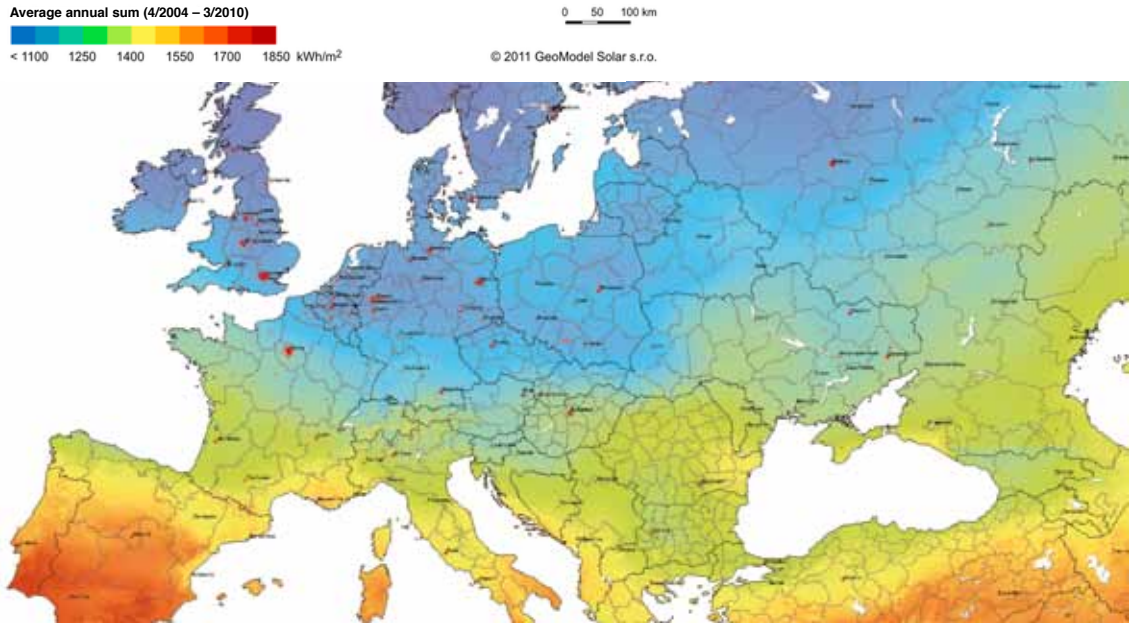
| MODEL | MAGNESIUM ANODE SUPPLIED | CATHODIC PROTECTION APPLICABLE |
|---|---|---|
| BXT 200 | 1.1/4" x 350 / Cod.8560046 | Cathodic protection with cylinders 100/400 l. Code 8560170 |
| BXT 300 | 1.1/4" x 550 / Cod.8560066 | |
| BXT 500 | 1.1/4" x 700 / Cod.8560086 | Cathodic protection with cylinders 500/1000 l. Code 8560175 |
| BXT 800 | 1.1/4" x 700 / Cod.8560086 | |
| BXT 1000 | 1.1/4" x 700 / Cod.8560086 | |

## TECHNICAL INFORMATION

**BXT CYLINDERS ARE SELECTED BASED ON MULTIPLE FACTORS THAT CAN BE BRIEFLY SUMMARISED AS FOLLOWS:**

- **SANITARY HOT WATER REQUIRED**
- **SUNLIGHT**
- **CYLINDER CAPACITY FOR THE NUMBER OF PEOPLE**
- **SOLAR COLLECTOR SURFACE FOR CYLINDER CAPACITY**

**SOLAR LIGHT:**
**LEVEL OF SUNLIGHT PER YEAR IN EUROPE (kWh/m²)**




**CYLINDER MODELS PER NUMBER OF PEOPLE:**

| MODEL | Number of people |
|---|---|
| BXT 200 | 1 - 2 |
| BXT 300 | 2 - 4 |
| BXT 400 | 3 - 5 |
| BXT 500 | 5 - 7 |
| BXT 800 | max. 10 |
| BXT 1000 | max. 18 |
| BXT 1500 | max. 22 |
| BXT 2000 | max. 38 |

**SOLAR COLLECTOR SURFACE TO COMBINE WITH THE SELECTED MODEL:**

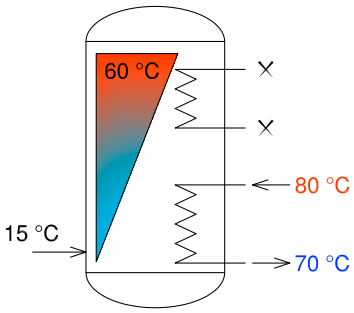
| MODEL | Solar collector surface (m²) |
|---|---|
| BXT 200 | 2.5 |
| BXT 300 | 5 |
| BXT 400 | 7.5 |
| BXT 500 | 10 |
| BXT 800 | 12.5 |
| BXT 1000 | 15 |
| BXT 1500 | 17.5 |
| BXT 2000 | 20 |

## TABLE OF HEATING ELEMENT APPLICABILITY TO CYLINDERS

| Heating element model* | | | | | Water heating time from 15° C to 60 °C (expressed in minutes) *The heating times outlined are approximate* | | | | |
|---|---|---|---|---|---|---|---|---|---|
| CODE | Power (kW) | Voltage (Volt) | Connection | Length (mm) | BXT-200 | BXT-300 | BXT-500 | BXT-800 | BXT-1000 |
| 8601000 | 1 | 220 V / MF | G 1.1/4" | 295 | 630 min. | 960 min. | 1580 min. | 2520 min. | 3150 min. |
| 8601650 | 1.65 | 220 V / MF | G 1.1/4" | 450 | 380 min. | 580 min. | 970 min. | 1550 min. | 1920 min. |
| 8602000 | 2 | 220 V / MF | G 1.1/4" | 515 | n.a. | n.a. | 800 min. | 1270 min. | 1580 min. |
| 8602600 | 2.6 | 220 V / MF | G 1.1/4" | 675 | n.a. | n.a. | n.a. | 980 min. | 1230 min. |
| 8602601 | 2.6 | 220 V / MF | G 1.1/4" | 360 | 250 min. | 370 min. | 630 min. | 980 min. | 1230 min. |
| 8603300 | 3.3 | 220 V / MF | G 1.1/4" | 825 | n.a. | n.a. | n.a. | n.a. | n.a. |
| 8603301 | 3.3 | 220 V / MF | G 1.1/4" | 435 | 200 min. | 295 min. | 490 min. | 780 min. | 980 min. |
| 8604001 | 4 | 220 V / MF | G 1.1/4" | 510 | n.a. | n.a. | 410 min. | 640 min. | 800 min. |
| 8705000 | 5 | 380 V / TF | G 1.1/2" | 445 | 140 min. | 200 min. | 330 min. | 520 min. | 640 min. |
| 8706000 | 6 | 380 V / TF | G 1.1/2" | 510 | n.a. | n.a. | 280 min. | 430 min. | 540 min. |
| 8708000 | 8 | 380 V / TF | G 1.1/2" | 670 | n.a. | n.a. | n.a. | 330 min. | 420 min. |
| 8710000 | 10 | 380 V / TF | G 1.1/2" | 820 | n.a. | n.a. | n.a. | n.a. | n.a. |
| 8712000 | 12 | 380 V / TF | G 1.1/2" | 970 | n.a. | n.a. | n.a. | n.a. | n.a. |

n.a. = Heating element not applicable

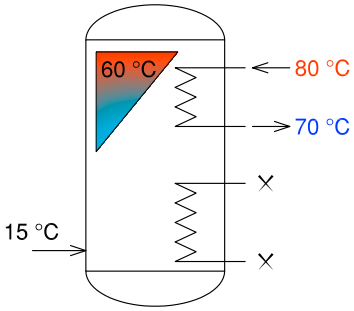
**ACCUMULATION AT 60 °C**
**HEAT EXCHANGER:** T.inlet = 80°C; ΔT = 10°C.
**STORAGE WATER HEATER:** T.inlet =15°C; T.accumulation= 60°C




| MODEL | THERMAL POWER [kW] | PUMP CAPACITY [l/hour] | HEATING TIME(1) [min] | PRODUCTION DHW AT 60°C [l/hour] | QUANTITY DHW AT 45°C IN FIRST 10 min. (2) [l] |
|---|---|---|---|---|---|
| BXT 200 | 16,50 | 1450 | 38 | 315 | 195 |
| BXT 300 | 29,00 | 2600 | 31 | 554 | 310 |
| BXT 500 | 44,00 | 3850 | 35 | 840 | 495 |
| BXT 800 | 50,00 | 4400 | 49 | 955 | 668 |
| BXT 1000 | 60,00 | 5300 | 47 | 1145 | 770 |

(1) Time required to bring the temperature of the cylinder from 15 °C to 60 °C.
(2) Quantity of DHW (Sanitary Hot Water) at 45°C available in the first 10 minutes with DHW acccumulation at 60° C.

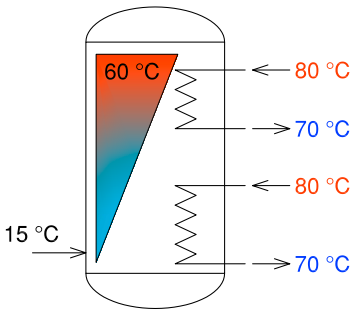
**ACCUMULATION AT 60 °C**
**HEAT EXCHANGER:** T.inlet = 80°C; ΔT = 10°C.
**STORAGE WATER HEATER:** T.inlet =15°C; T.accumulation= 60°C




| MODEL | THERMAL POWER [kW] | PUMP CAPACITY [l/hour] | HEATING TIME(1) [min] | PRODUCTION DHW AT 60°C [l/hour] |
|---|---|---|---|---|
| BXT 200 | 11,50 | 1000 | 24 | 220 |
| BXT 300 | 18,00 | 1500 | 22 | 340 |
| BXT 500 | 21,00 | 1850 | 32 | 400 |
| BXT 800 | 29,00 | 2500 | 35 | 550 |
| BXT 1000 | 29,00 | 2500 | 37 | 550 |

(1) Time required to bring the temperature of the upper part of the cylinder (about 1/3 of the total volume) from 15 °C to 60 °C.

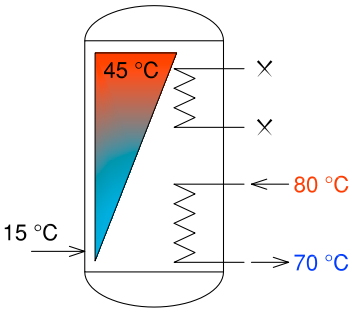
**ACCUMULATION AT 60 °C**
**HEAT EXCHANGER:** T.inlet = 80°C; ΔT = 10°C.
**STORAGE WATER HEATER:** T.inlet =15°C; T.accumulation= 60°C




| MODEL | THERMAL POWER [kW] | UPPER PUMP CAPACITY [l/hour] | LOWER PUMP CAPACITY [l/hour] | HEATING TIME(1) [min] | PRODUCTION DHW AT 60°C [l/hour] |
|---|---|---|---|---|---|
| BXT 200 | 28,00 | 1000 | 1450 | 22 | 530 |
| BXT 300 | 47,00 | 1500 | 2600 | 20 | 890 |
| BXT 500 | 65,00 | 1850 | 3850 | 24 | 1240 |
| BXT 800 | 79,00 | 2500 | 4400 | 32 | 1500 |
| BXT 1000 | 89,00 | 2500 | 5300 | 35 | 1700 |

(1) Time required to bring the temperature of the cylinder from 15 °C to 60 °C.

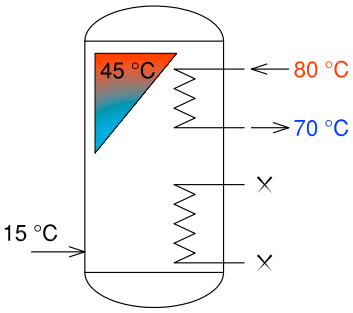
**ACCUMULATION AT 45 °C**
**HEAT EXCHANGER:** T.inlet = 80°C; ΔT = 10°C.
**STORAGE WATER HEATER:** T.inlet =15°C; T.accumulation= 45°C




| MODEL | THERMAL POWER [kW] | PUMP CAPACITY [l/hour] | HEATING TIME(1) [min] | PRODUCTION DHW AT 45°C [l/hour] |
|---|---|---|---|---|
| BXT 200 | 20,00 | 1760 | 21 | 570 |
| BXT 300 | 35,00 | 3000 | 18 | 1000 |
| BXT 500 | 53,00 | 4670 | 20 | 1500 |
| BXT 800 | 59,50 | 5200 | 28 | 1700 |
| BXT 1000 | 68,50 | 6000 | 28 | 1960 |

(1) Time required to bring the temperature of the cylinder from 15 °C to 45 °C.

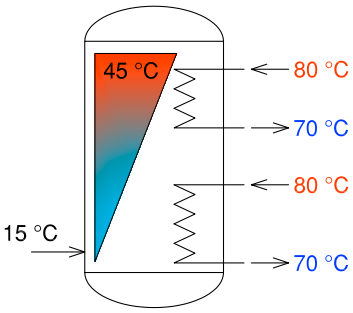
**ACCUMULATION AT 45 °C**
**HEAT EXCHANGER:** T.inlet = 80°C; ΔT = 10°C.
**STORAGE WATER HEATER:** T.inlet =15°C; T.accumulation= 45°C




| MODEL | THERMAL POWER [kW] | PUMP CAPACITY [l/hour] | HEATING TIME(1) [min] | PRODUCTION DHW AT 45°C [l/hour] |
|---|---|---|---|---|
| BXT 200 | 14,00 | 1230 | 14 | 400 |
| BXT 300 | 21,50 | 1840 | 13 | 610 |
| BXT 500 | 26,00 | 2230 | 18 | 740 |
| BXT 800 | 36,00 | 3170 | 19 | 1020 |
| BXT 1000 | 36,00 | 3170 | 20 | 1020 |

(1) Time required to bring the temperature of the cylinder (circa 1/3 of the total volume) from 15 °C to 45°C.

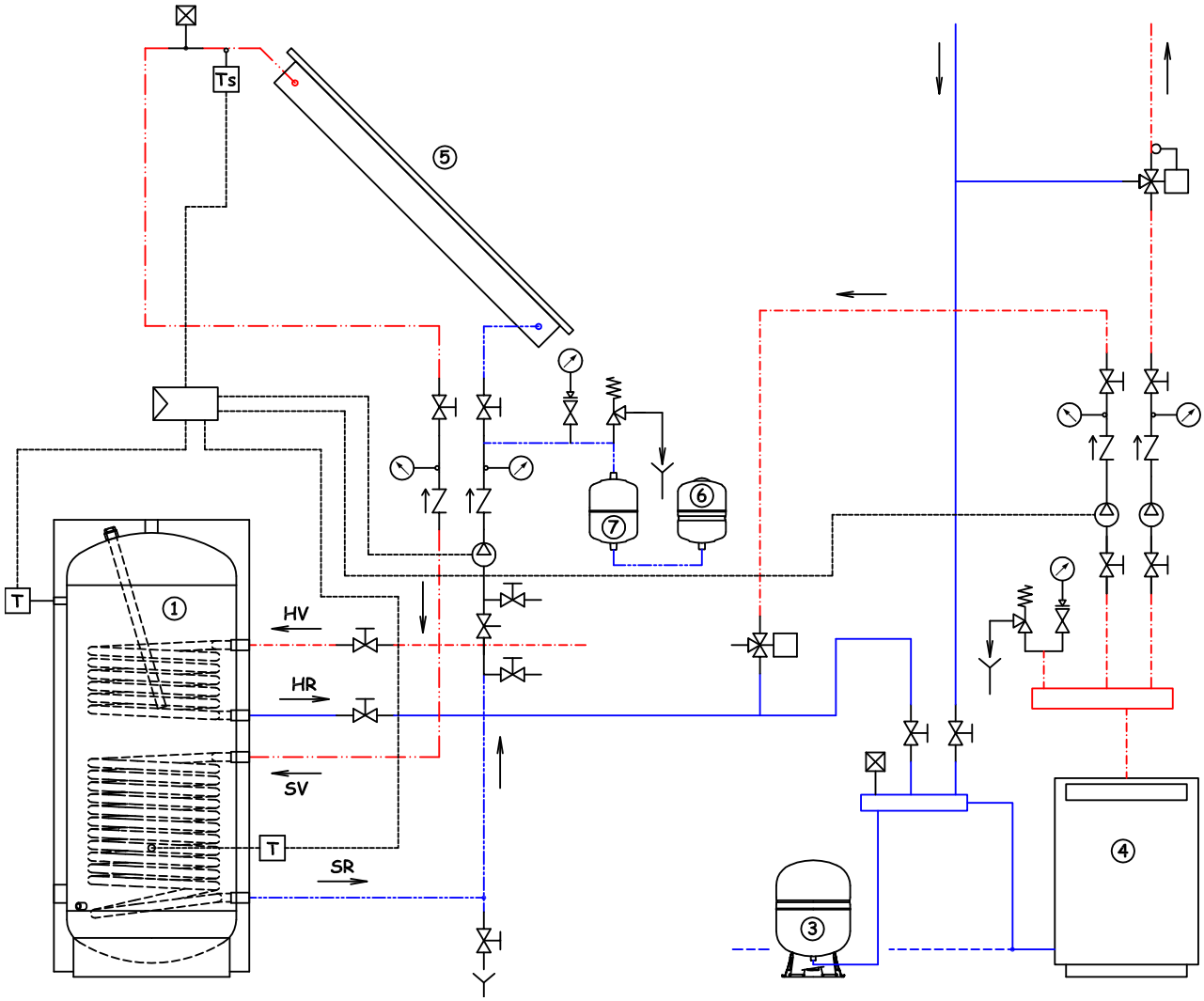
**ACCUMULATION AT 45 °C**
**HEAT EXCHANGER:** T.inlet = 80°C; ΔT = 10°C.
**STORAGE WATER HEATER:** T.inlet =15°C; T.accumulation= 45°C




| MODEL | THERMAL POWER [kW] | UPPER PUMP CAPACITY [l/hour] | LOWER PUMP CAPACITY [l/hour] | HEATING TIME(1) [min] | PRODUCTION DHW AT 45°C [l/hour] |
|---|---|---|---|---|---|
| BXT 200 | 34,00 | 1760 | 1230 | 12 | 970 |
| BXT 300 | 56,50 | 3000 | 1840 | 11 | 1580 |
| BXT 500 | 79,00 | 4670 | 2230 | 13 | 2250 |
| BXT 800 | 95,00 | 5200 | 3170 | 18 | 2730 |
| BXT 1000 | 104,50 | 6000 | 3170 | 20 | 2990 |

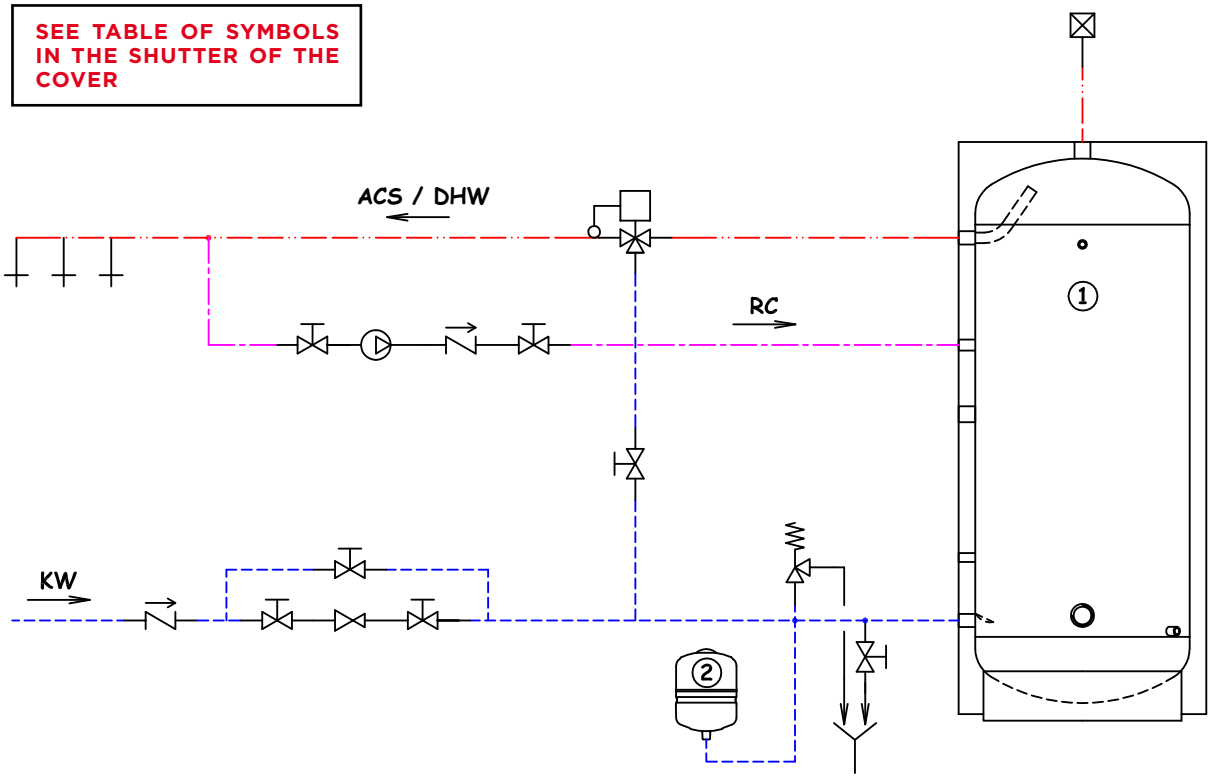
(1) Time required to bring the temperature of the cylinder from 15 °C to 45°C.

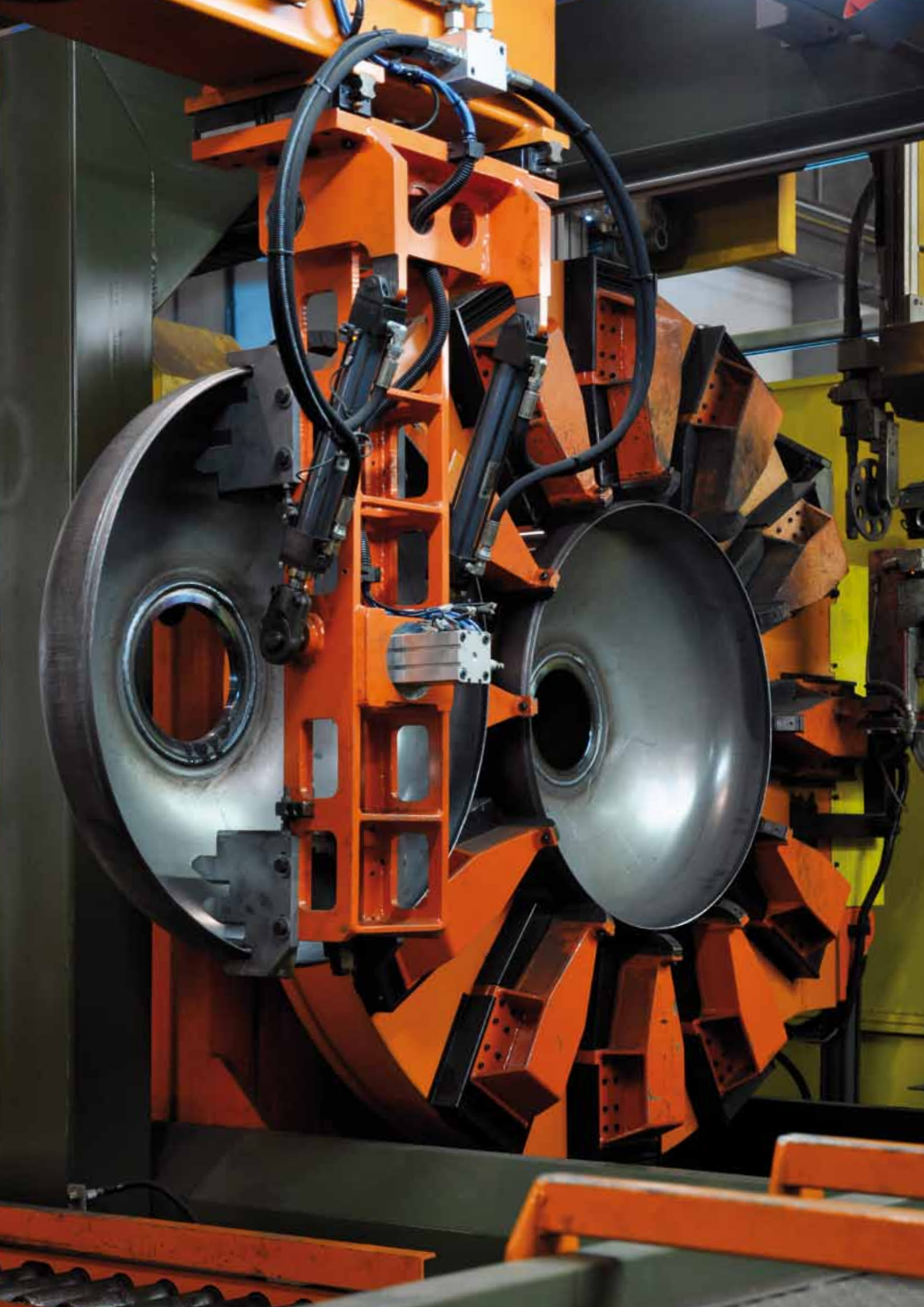
## HYDRAULIC DIAGRAM 1 (BXT CYLINDER WITH SOLAR CIRCUIT AND INTEGRATION)




## HYDRAULIC DIAGRAM 2 (BXT CYLINDER WITH SANITARY CIRCUIT)

**SEE TABLE OF SYMBOLS IN THE SHUTTER OF THE COVER**





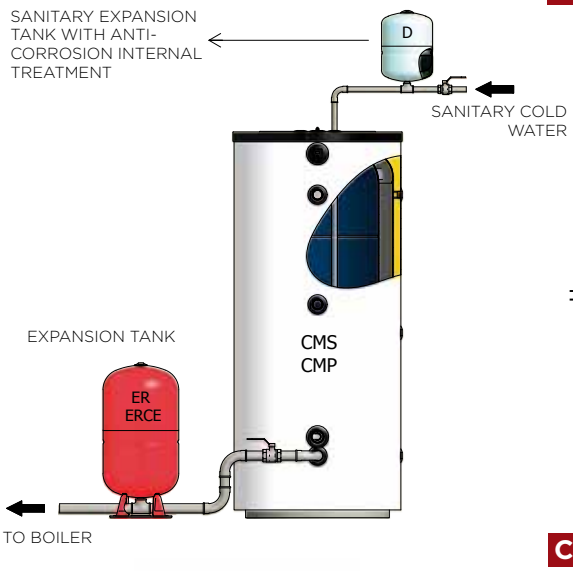
# COMBI

VR
THERMO-ACCUMULATOR

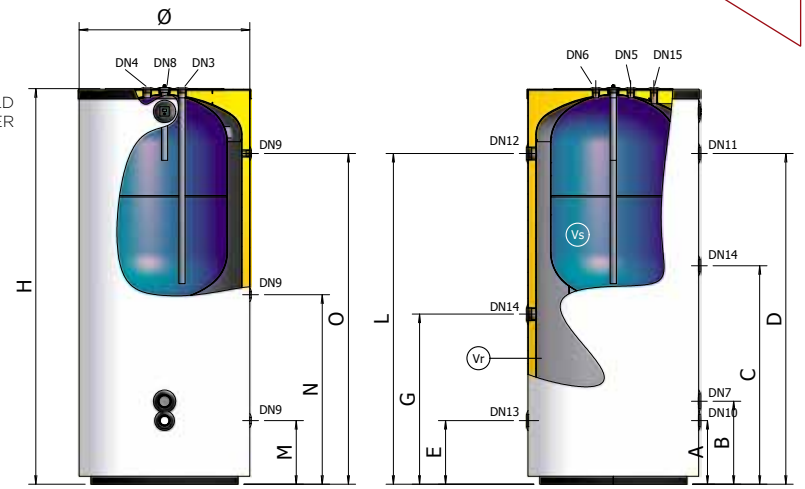
VS
INTERNAL CYLINDER

## MULTY ENERGY BUFFER TANKS

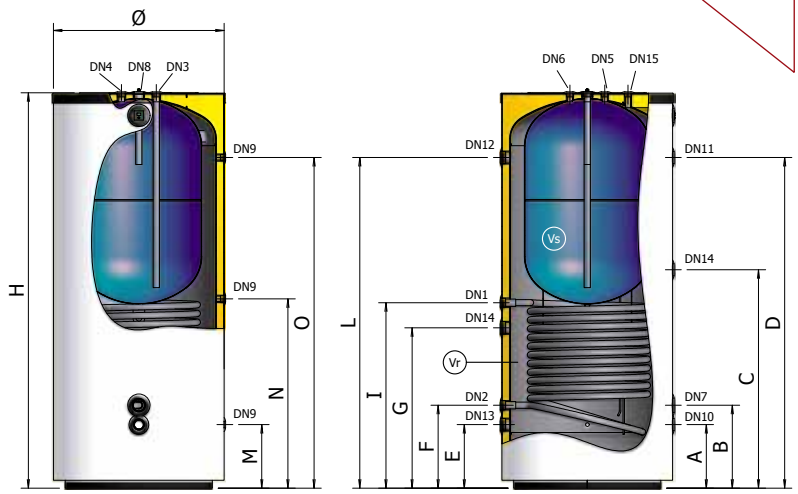
FOR STORAGE OF HOT WATER FOR HEATING & DHW PRODUCTION (500 - 1000 LITRES)




## CMS 500 - 800 - 1000




## CMP 500 - 800 - 1000




### KEYWORD

**DN1:** Heat exchanger inlet; **DN2:** Heat exchanger outlet; **DN3:** Sanitary cold water inlet; **DN4:** Sanitary cold water outlet; **DN5:** Sanitary circuit probe; **DN6:** Sanitary hot water recirculation; **DN7:** Heating element; **DN8:** Magnesium anode; **DN9:** Heat system probes; **DN10:** System return; **DN11:** System delivery; **DN12:** Boiler delivery; **DN13:** Boiler return; **DN14:** Heating system recirculation; **DN15:** Vent

- CYLINDER
- FOR SANITARY HOT WATER
- SUITABLE FOR SOLAR SYSTEMS
- ANODE WITH TESTER
- FOR HEATING SYSTEMS
- POLYURETHANE INSULATION
- TANK FOR HOT WATER STORAGE
- + 95°C MAX WORKING TEMPERATURE OF THERMO-ACCUMULATOR
- + 95°C MAX WORKING TEMPERATURE OF SANITARY ACCUMULATOR
- + 110°C HEAT EXCHANGER MAX TEMPERATURE
- $P_{MAX\ VS}$ 6 bar MAX WORKING PRESSURE OF SANITARY ACCUMULATOR
- $P_{MAX\ VR}$ 3 bar MAX WORKING PRESSURE OF THERMO-ACCUMULATOR
- $P_{SCA}$ 12 bar MAX PRESSURE OF EXCHANGER

**WARRANTY: 2 YEARS**

### INSULATION:

Hard, expanded polyurethane without CFC and HCFC.

### HEAT EXCHANGER:

Single-tube fixed heat exchanger in carbon steel for alternative sources.

### REFERENCE STANDARDS
### CYLINDER:

Directive PED 97/23/EC – ART. 3.3, without CE marking
Standard EN 12897:2006

### INTERNAL GLASSLINING OF SANITARY ACCUMULATOR Vs:

DIN 4753

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

### INSTALLATION:

· traditional boilers (wall-hung and/or floor-standing)
· condensing boilers
· solar thermal systems

| | | LITRES | LITRES Vs | LITRES Vr | HEAT EXCHANGER m² | HEAT EXCHANGER LITRES | mm | mm | NOTES |
|---|---|---|---|---|---|---|---|---|---|
| CMS-500 | A3D0L55 0000S | 500 | 100 | 400 | / | / | 750 | 1695 | |
| CMS-800 | A3D0L60 0000S | 800 | 200 | 600 | / | / | 900 | 1795 | |
| CMS-1000 | A3D0L62 0000S | 1000 | 300 | 700 | / | / | 900 | 2045 | |
| CMP-500 | A3D0L55 0000P | 500 | 100 | 400 | 2,00 | 13 | 750 | 1695 | |
| CMP-800 | A3D0L60 0000P | 800 | 200 | 600 | 2,50 | 15 | 900 | 1795 | |
| CMP-1000 | A3D0L62 0000P | 1000 | 300 | 700 | 2,50 | 15 | 900 | 2045 | |

| MODEL | A mm | B mm | C mm | D mm | E mm | F mm | G mm | I mm | L mm | M mm | N mm | O mm |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| CMS-500 | 280 | 390 | 1030 | 1430 | / | 280 | 780 | / | 1430 | 280 | 905 | 1430 |
| CMS-800 | 330 | 430 | 980 | 1480 | / | 330 | 830 | / | 1480 | 330 | 880 | 1480 |
| CMS-1000 | 330 | 430 | 1130 | 1710 | / | 330 | 880 | / | 1710 | 330 | 980 | 1710 |
| CMP-500 | 280 | 390 | 1030 | 1430 | 390 | 280 | 780 | 970 | 1430 | 280 | 905 | 1430 |
| CMP-800 | 330 | 440 | 1080 | 1480 | 430 | 330 | 780 | 930 | 1480 | 330 | 955 | 1480 |
| CMP-1000 | 330 | 430 | 1130 | 1710 | 430 | 330 | 830 | 960 | 1710 | 330 | 980 | 1710 |

| MODEL | ANODE ø x ø conn. x L | DN 1 | DN 2 | DN 3 | DN 4 | DN 5 | DN 6 | DN 7 | DN 8 | DN 9 | DN 10 | DN 11 | DN 12 | DN 13 | DN 14 | DN 15 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| CMS-500 | 32 x 1.1/4“ x 350 | / | / | 3/4” | 3/4” | 1/2” | 1/2” | 2” | 1.1/4” | 1/2” | 1.1/2” | 1.1/2” | 1.1/2” | 1.1/2” | 1.1/2” | 1/2” |
| CMS-800 | 32 x 1.1/4“ x 350 | / | / | 3/4” | 3/4” | 1/2” | 1/2” | 2” | 1.1/4” | 1/2” | 1.1/2” | 1.1/2” | 1.1/2” | 1.1/2” | 1.1/2” | 1/2” |
| CMS-1000 | 32 x 1.1/4“ x 350 | / | / | 3/4” | 3/4” | 1/2” | 1/2” | 2” | 1.1/4” | 1/2” | 1.1/2” | 1.1/2” | 1.1/2” | 1.1/2” | 1.1/2” | 1/2” |
| CMP-500 | 32 x 1.1/4“ x 350 | 1“ | 1“ | 3/4” | 3/4” | 1/2” | 1/2” | 2” | 1.1/4” | 1/2” | 1.1/2” | 1.1/2” | 1.1/2” | 1.1/2” | 1.1/2” | 1/2” |
| CMP-800 | 32 x 1.1/4“ x 350 | 1“ | 1“ | 3/4” | 3/4” | 1/2” | 1/2” | 2” | 1.1/4” | 1/2” | 1.1/2” | 1.1/2” | 1.1/2” | 1.1/2” | 1.1/2” | 1/2” |
| CMP-1000 | 32 x 1.1/4“ x 350 | 1“ | 1“ | 3/4” | 3/4” | 1/2” | 1/2” | 2” | 1.1/4” | 1/2” | 1.1/2” | 1.1/2” | 1.1/2” | 1.1/2” | 1.1/2” | 1/2” |

## TECHNICAL CHARACTERISTICS

| MODEL | MAX WORKING PRESSURE THERMO-ACCUMULATOR (Primary circuit) | MAX WORKING PRESSURE SANITARY TANK (Secondary circuit) | HEAT EXCHANGER | HEAT EXCHANGER PRESSURE DROP STAINLESS STEEL HEAT EXCHANGER |
|---|---|---|---|---|
| CMS-500 | 3 bar | 6 bar | 12 bar | / |
| CMS-800 | | | | / |
| CMS-1000 | | | | / |
| CMP-500 | | | | 350 mbar |
| CMP-800 | | | | 350 mbar |
| CMP-1000 | | | | 400 mbar |

| MODEL | INSULATION TYPE | INSULATION THICKNESS | INSULATION DENSITY | INITIAL THERMAL CONDUCTIVITY | (*) INSULATION THERMAL LOSS | EXTERNAL COVER |
|---|---|---|---|---|---|---|
| COMBI 500 | 95% closed cells rigid expanded polyurethane, CFC - HCFC free | 50 mm | 40 kg/m$^3$ | 23,5 mW/m K | 0,98 kWh / 24h | Grey polystyrene RAL 9006 |
| COMBI 800 | | | | | 1,29 kWh / 24h | |
| COMBI 1000 | | | | | 1,84 kWh / 24h | |

(*) Thermal loss calculated with an accumulation temperature equal to 60 °C and with an external temperature equal to 15 °C.

## SAFETY DEVICES

**ATTENTION:**
DURING INSTALLATION, MAKE SURE THAT THE INTERNAL DHW CYLINDER (Vs) IS FILLED AND PRESSURIZED BEFORE THE THERMO-ACCUMULATOR (Vr).
IN ALL EVENTS, THE THERMO-ACCUMULATOR (Vr) PRESSURE MUST NEVER EXCEED THE INTERNAL DHW CYLINDER (Vs) PRESSURE OF 1.5 BAR.

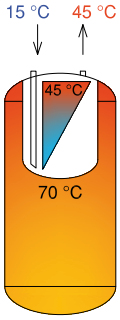
The cylinders must be protected against the effects of over pressure by installing:
· **A SAFETY VALVE** calibrated to pressure below the max pressure of the cylinder
· **A SANITARY EXPANSION TANK** for the cylinder (VS) mod. ELBI **D – DV series**
· **AN EXPANSION TANK FOR THE THERMO-ACCUMULATOR (Vr) mod. ELBI ERCE series**
The ERCE series expansion tank must be adequately sized based on the total capacity of the system

| MODEL | RECOMMENDED EXPANSION TANK FOR SANITARY CIRCUIT (mod. ELBI D-DV series) | RECOMMENDED EXPANSION TANK FOR BUFFER TANK (mod. ELBI ERCE series) |
|---|---|---|
| COMBI 500 | D – 8 | ERCE - 35 |
| COMBI 800 | D – 18 | ERCE - 50 |
| COMBI 1000 | D – 24 | ERCE - 80 |

Sized using the following parameters: T. accumulation= 85 °C / T. inlet = 15 °C / Pre-charge pressure = 3 bar / Max pressure = 6 bar
*The recommended capacity must be verified on the basis of the actual dimensions of the system implemented.*

## ACCUMULATION AT 70 °C

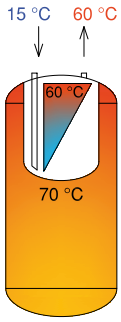
**DHW TANK:** T.inlet =15°C; T.outlet= 45°C




| MODEL | THERMAL POWER [kW] | HEATING TIME(1) [min] | PRODUCTION DHW AT 45°C [l/hour] |
|---|---|---|---|
| COMBI 500 | 13 | 16 | 370 |
| COMBI 800 | 20 | 20 | 560 |
| COMBI 1000 | 23 | 30 | 640 |

## ACCUMULATION AT 70 °C

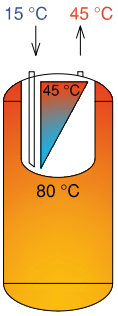
**DHW TANK:** T.inlet =15°C; T.outlet= 60°C




| MODEL | THERMAL POWER [kW] | HEATING TIME(1) [min] | PRODUCTION DHW AT 60°C [l/hour] |
|---|---|---|---|
| COMBI 500 | 9 | 35 | 170 |
| COMBI 800 | 13 | 48 | 250 |
| COMBI 1000 | 15 | 60 | 290 |

## ACCUMULATION AT 80 °C

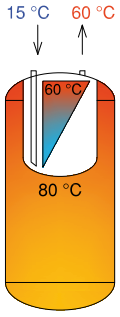
**DHW TANK:** T.inlet =15°C; T.outlet= 45°C




| MODEL | THERMAL POWER [kW] | HEATING TIME(1) [min] | PRODUCTION DHW AT 45°C [l/hour] |
|---|---|---|---|
| COMBI 500 | 17 | 12 | 490 |
| COMBI 800 | 25 | 16 | 730 |
| COMBI 1000 | 29 | 22 | 840 |

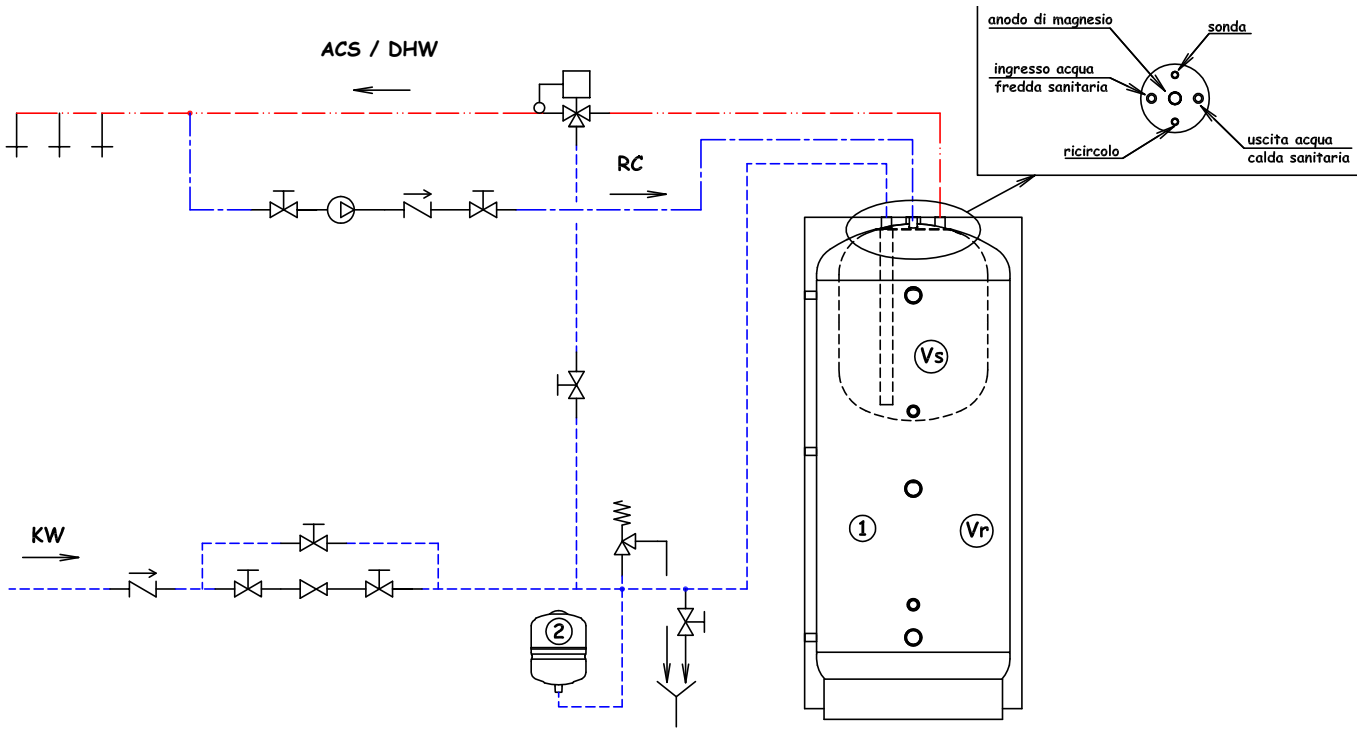
## ACCUMULATION AT 80 °C

**DHW TANK:** T.inlet =15°C; T.outlet= 60°C.

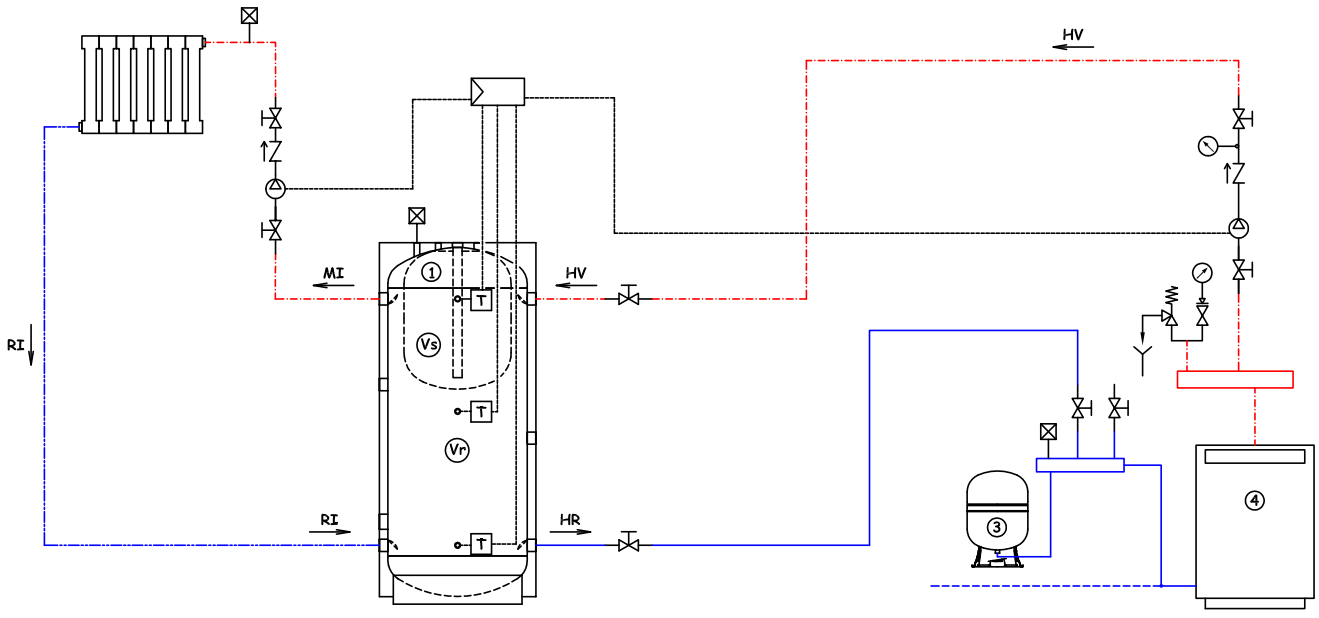


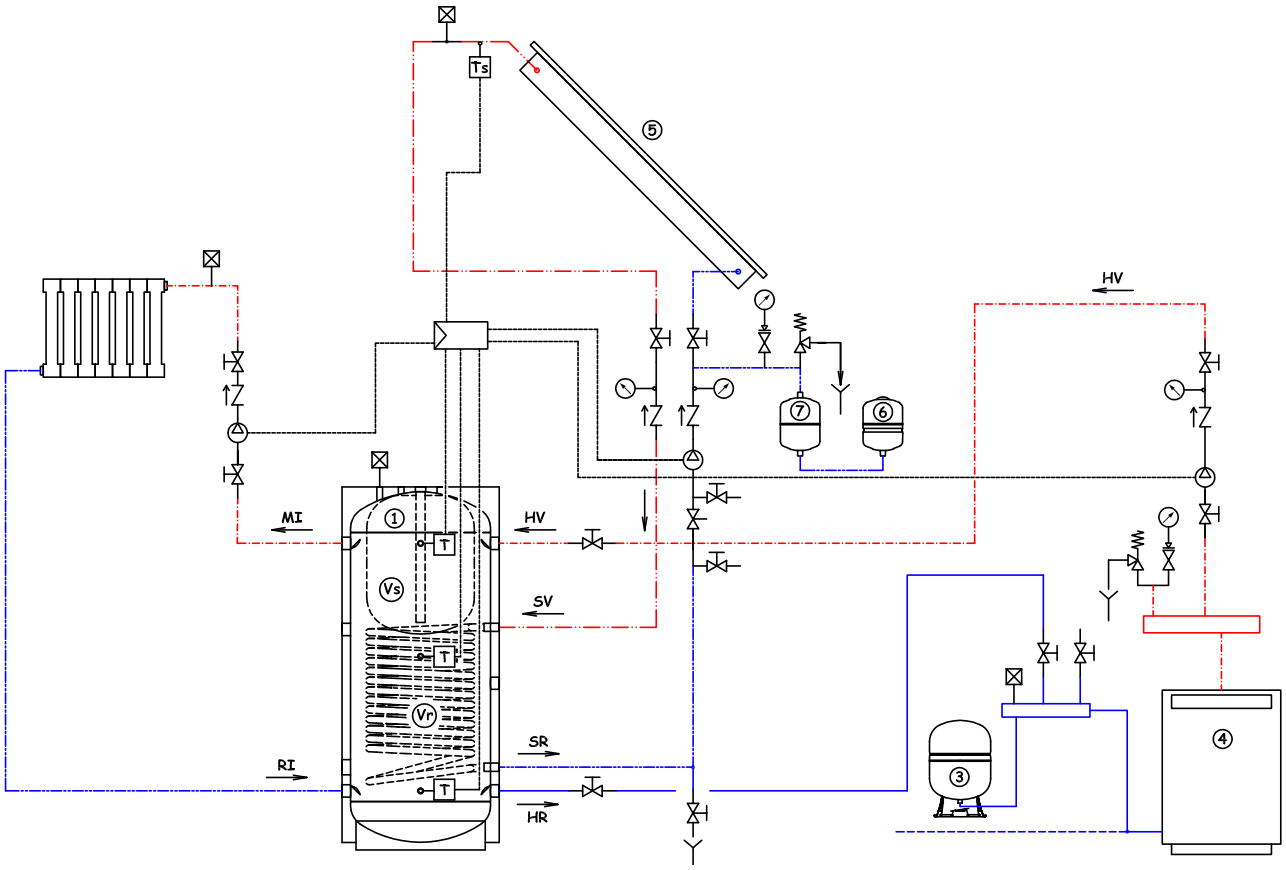

| MODEL | THERMAL POWER [kW] | HEATING TIME(1) [min] | PRODUCTION DHW AT 60°C [l/hour] |
|---|---|---|---|
| COMBI 500 | 13 | 23 | 250 |
| COMBI 800 | 20 | 32 | 380 |
| COMBI 1000 | 23 | 45 | 440 |

## HYDRAULIC DIAGRAM FOR COMBI-PLUS AND STANDARD SANITARY CIRCUIT




## HYDRAULIC DIAGRAM OF COMBI-STANDARD HEATING CIRCUIT






SEE TABLE OF SYMBOLS IN THE SHUTTER OF THE COVER

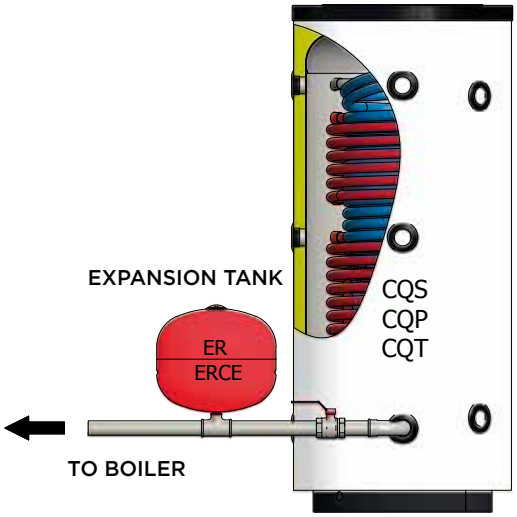
THERMO-ACCUMULATOR

STAINLESS STEEL HEAT EXCHANGER

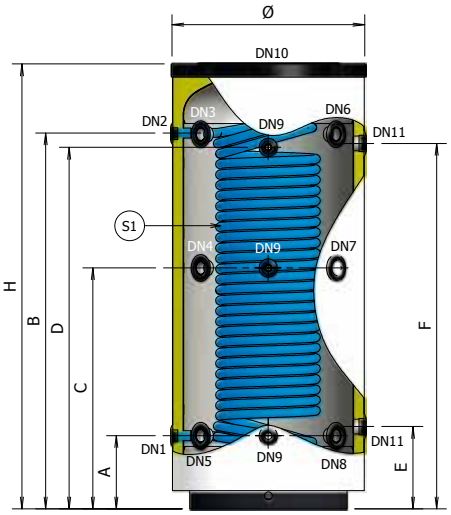
# COMBI QUICK

## MULTY ENERGY BUFFER TANKS

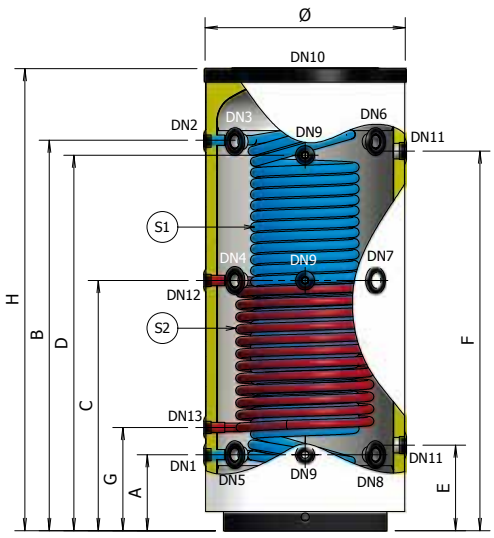
FOR STORAGE OF HOT WATER FOR HEATING & INSTANT DHW PRODUCTION (500 - 1000 LITRES)



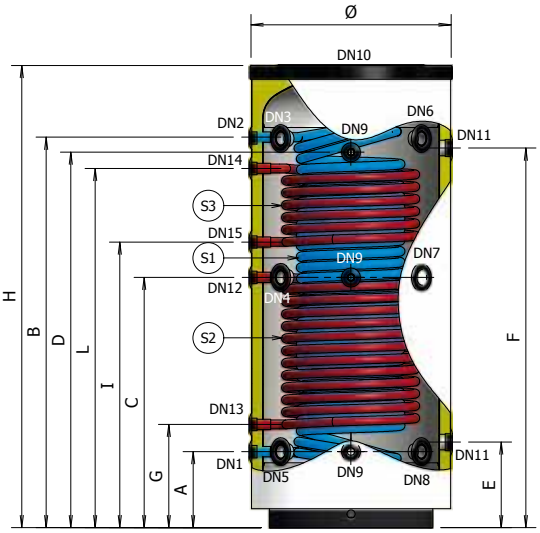

### CQS 500 - 800 - 1000




### CQP 500 - 800 - 1000




### CQT 500 - 800 - 1000




**KEYWORD**

**DN1:** Sanitary cold water inlet; **DN2:** Sanitary hot water outlet; **DN3:** From boiler; **DN4:** To floor heating system; **DN5:** To boiler; **DN6:** To heating system (plant); **DN7:** From heating system; **DN8:** From floor heating system; **DN9:** Probes; **DN10:** Air vent / to heating systems; **DN11:** Imersion heater; **DN12:** Lower heat exchanger inlet; **DN13:** Lower heat exchanger outlet; **DN14:** Vent

- CYLINDER
- FOR SANITARY HOT WATER
- SUITABLE FOR SOLAR SYSTEMS
- POLYURETHANE INSULATION
- THERM-ACCUMULATOR FOR INSTANT SANITARY HOT WATER
- HOT WATER STORAGE TANK
- STAINLESS STEEL HEAT EXCHANGER
- FOR HEATING SYSTEMS

+ 95°C
MAX TEMPERATURE OF CYLINDER

+ 110°C
HEAT EXCHANGER MAX TEMPERATURE

$P_{MAX}$ 10 bar
MAX WORKING PRESSURE OF THERMO-ACCUMULATOR

$P_{SCA}$ 12 bar
HEAT EXCHANGER MAX PRESSURE

**WARRANTY: 2 YEARS**

**REFERENCE STANDARDS**
**CYLINDER:**
Directive PED 97/23/EC – ART. 3.3, without CE marking
Standard EN 12897:2006

**INSULATION:**
Hard expanded polyurethane without CFC and HCFC.

**HEAT EXCHANGER:**
Single-tube fixed heat exchanger in stainless steel for sanitary hot water.
On request, additional heat exchangers for alternative sources are available.

**INSTALLATION:**
· traditional boilers (wall-hung and/or floor-standing)
· condensing boilers
· solar thermal systems

| MODEL | CODE | HEAT EXCHANGER | | | | | | | | | | NOTES |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | STAINLESS STEEL S1 | | LOWER S2 | | UPPER S3 | | | | | |
| | | LITRES | m² | LITRES | m² | LITRES | m² | LITRES | mm | mm | | |
| CQS-500 | A3W0L55 PGP40 | 500 | 3,50 | 25 | / | / | / | / | 750 | 1695 | | |
| CQS-800 | A3W0L60 PGP40 | 800 | 3,80 | 28 | / | / | / | / | 900 | 1795 | | |
| CQS-1000 | A3W0L62 PGP40 | 1000 | 4,50 | 33 | / | / | / | / | 900 | 2045 | | |
| CQP-500 | A3W1L55 PGP40 | 500 | 3,50 | 25 | 1,80 | 12 | / | / | 750 | 1695 | | |
| CQP 800 | A3W1L60 PGP40 | 800 | 3,80 | 28 | 2,00 | 13 | / | / | 900 | 1795 | | |
| CQP-1000 | A3W1L62 PGP40 | 1000 | 4,50 | 33 | 2,40 | 15 | / | / | 900 | 2045 | | |
| CQT-500 | A3W2L55 PGP40 | 500 | 3,50 | 25 | 1,80 | 12 | 0,90 | 6 | 750 | 1695 | | |
| CQT-800 | A3W2L60 PGP40 | 800 | 3,80 | 28 | 2,00 | 13 | 1,20 | 8 | 900 | 1795 | | |
| CQT-1000 | A3W2L62 PGP40 | 1000 | 4,50 | 33 | 2,40 | 15 | 1,20 | 8 | 900 | 2045 | | |

| MODEL | A mm | B mm | C mm | D mm | E mm | F mm | G mm | I mm | L mm |
|---|---|---|---|---|---|---|---|---|---|
| CQS-500 | 280 | / | 900 | / | 1430 | / | / | / | / |
| CQS-800 | 340 | / | 985 | / | 1470 | / | / | / | / |
| CQS-1000 | 365 | / | 1160 | / | 1675 | / | / | / | / |
| CQP-500 | 280 | 550 | 900 | / | 1430 | 280 | 820 | / | / |
| CQP 800 | 340 | 680 | 985 | / | 1470 | 450 | 910 | / | / |
| CQP-1000 | 365 | 745 | 1160 | / | 1675 | 450 | 1045 | / | / |
| CQT-500 | 280 | 550 | 900 | 1115 | 1430 | 280 | 820 | 980 | 1250 |
| CQT-800 | 340 | 680 | 985 | 1195 | 1470 | 450 | 910 | 1060 | 1330 |
| CQT-1000 | 365 | 745 | 1160 | 1415 | 1675 | 450 | 1045 | 1280 | 1550 |

| MODEL | DN 1 | DN 2 | DN 3 | DN 4 | DN 5 | DN 6 | DN 7 | DN 8 | DN 9 | DN 10 | DN 11 | DN 12 | DN 13 | DN 14 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| CQS-500 | 1“ | 1“ | 1.1/2” | 1.1/2” | 1.1/2” | 1.1/2” | 1.1/2” | 1.1/2” | 1.1/2” | / | / | / | 1.1/2” | 3/4” |
| CQS-800 | 1“ | 1“ | 1.1/2” | 1.1/2” | 1.1/2” | 1.1/2” | 1.1/2” | 1.1/2” | 1.1/2” | / | / | / | 1.1/2” | 3/4” |
| CQS-1000 | 1“ | 1“ | 1.1/2” | 1.1/2” | 1.1/2” | 1.1/2” | 1.1/2” | 1.1/2” | 1.1/2” | / | / | / | 1.1/2” | 3/4” |
| CQP-500 | 1“ | 1“ | 1.1/2” | 1.1/2” | 1.1/2” | 1.1/2” | 1.1/2” | 1.1/2” | 1.1/2” | / | / | 1“ | 1“ | 3/4” |
| CQP 800 | 1“ | 1“ | 1.1/2” | 1.1/2” | 1.1/2” | 1.1/2” | 1.1/2” | 1.1/2” | 1.1/2” | / | / | 1“ | 1“ | 3/4” |
| CQP-1000 | 1“ | 1“ | 1.1/2” | 1.1/2” | 1.1/2” | 1.1/2” | 1.1/2” | 1.1/2” | 1.1/2” | / | / | 1“ | 1“ | 3/4” |
| CQT-500 | 1“ | 1“ | 1.1/2” | 1.1/2” | 1.1/2” | 1.1/2” | 1.1/2” | 1.1/2” | 1.1/2” | 1“ | 1“ | 1“ | 1“ | 3/4” |
| CQT-800 | 1“ | 1“ | 1.1/2” | 1.1/2” | 1.1/2” | 1.1/2” | 1.1/2” | 1.1/2” | 1.1/2” | 1“ | 1“ | 1“ | 1“ | 3/4” |
| CQT-1000 | 1“ | 1“ | 1.1/2” | 1.1/2” | 1.1/2” | 1.1/2” | 1.1/2” | 1.1/2” | 1.1/2” | 1“ | 1“ | 1“ | 1“ | 3/4” |

## TECHNICAL CHARACTERISTICS

| MODEL | MAX WORKING PRESSURE STORAGE TANK CASING (Secondary circuit) | MAX WORKING PRESSURE EXCHANGER (Circuits of alternative sources and DHW production) | HEAT EXCHANGER PRESSURE DROP | | |
|---|---|---|---|---|---|
| | | | LOWER HEAT EXCHANGER | UPPER HEAT EXCHANGER | STAINLESS STEEL HEAT EXCHANGER |
| CQS-500 | 10 bar | 12 bar | / | / | 40 mbar |
| CQS-800 | | | / | / | 45 mbar |
| CQS-1000 | | | / | / | 50 mbar |
| CQP-500 | | | 300 mbar | / | 40 mbar |
| CQP-800 | | | 350 mbar | / | 45 mbar |
| CQP-1000 | | | 400 mbar | / | 50 mbar |
| CQT-500 | | | 300 mbar | 120 mbar | 40 mbar |
| CQT-800 | | | 350 mbar | 200 mbar | 45 mbar |
| CQT-1000 | | | 400 mbar | 200 mbar | 50 mbar |

| MODEL | INSULATION TYPE | INSULATION THICKNESS | INSULATION DENSITY | INITIAL THERMAL CONDUCTIVITY | (*) INSULATION THERMAL LOSS | EXTERNAL COVER |
|---|---|---|---|---|---|---|
| COMBI QUICK 500 | 95% closed cells rigid expanded polyurethane, CFC - HCFC free | 50 mm | 40 kg/m³ | 23,5 mW/m K | 1,84 kWh / 24h | Grey polystyrene RAL 9006 |
| COMBI QUICK 800 | | | | | 2,37 kWh / 24h | |
| COMBI QUICK 1000 | | | | | 2,71 kWh / 24h | |

(*) Thermal loss calculated with an accumulation temperature equal to 60 °C and with an external temperature equal to 15 °C.

## SAFETY DEVICES

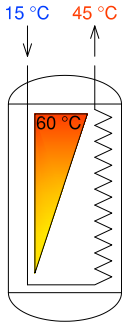
The cylinders must be protected against the effects of over pressure by installing:
· A **SAFETY VALVE** calibrated to pressure below the max pressure of the cylinder
· A **SANITARY EXPANSION TANK** mod. ELBI D – DV series
· AN **EXPANSION TANK FOR THE THERMO-ACCUMULATOR (Vr) mod. ELBI ERCE series**
The ERCE series expansion tank must be adequately sized based on the total capacity of the system

| MODEL | RECOMMENDED EXPANSION TANK IN SANITARY CIRCUIT (mod. ELBI D-DV series) | RECOMMENDED EXPANSION TANK (mod. ELBI ERCE series) |
|---|---|---|
| COMBI QUICK 500 | D – 5 | ERCE - 35 |
| COMBI QUICK 800 | D – 8 | ERCE - 50 |
| COMBI QUICK 1000 | D – 11 | ERCE - 80 |

Sized using the following parameters: T. accumulation= 85 °C / T. inlet = 15 °C / Pre-charge pressure = 3 bar / Max pressure = 6 bar
*The recommended capacity must be verified on the basis of the actual dimensions of the system implemented.*

## ACCUMULATION AT 60 °C

**STAINLESS STEEL HEAT EXCHANGER:** T.inlet =15°C; T.outlet= 45°C

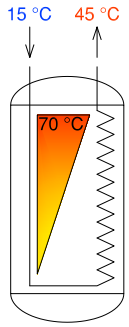



| MODEL | THERMAL POWER [kW] | PRODUCTION DHW AT 45°C [lt/h] |
|---|---|---|
| COMBI QUICK 500 | 24 | 710 |
| COMBI QUICK 800 | 26 | 760 |
| COMBI QUICK 1000 | 30 | 860 |

Continuous production of hot water at 45 °C with accumulation at 60 °C

## ACCUMULATION AT 70 °C

**STAINLESS STEEL HEAT EXCHANGER:** T.inlet =15°C; T.outlet= 45°C

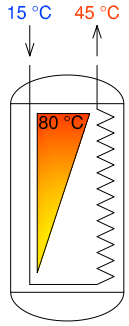



| MODEL | THERMAL POWER [kW] | PRODUCTION DHW AT 45°C [lt/h] |
|---|---|---|
| COMBI QUICK 500 | 33 | 960 |
| COMBI QUICK 800 | 35 | 1000 |
| COMBI QUICK 1000 | 42 | 1220 |

Continuous production of hot water at 45 °C with accumulation at 70 °C

## ACCUMULATION AT 80 °C

**STAINLESS STEEL HEAT EXCHANGER:** T.inlet =15°C; T.outlet= 45°C

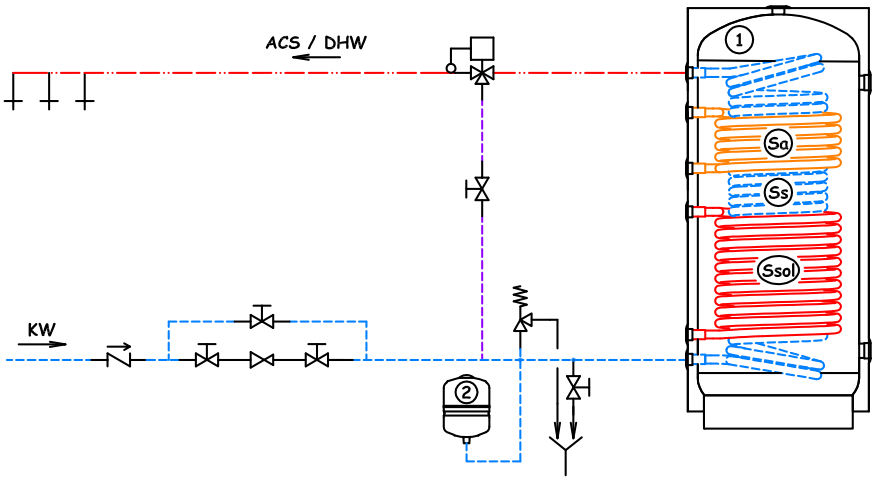



| MODEL | THERMAL POWER STAINLESS STEEL HEAT EXCHANGER [kW] | PRODUCTION DHW AT 45°C [lt/h] |
|---|---|---|
| COMBI QUICK 500 | 42 | 1210 |
| COMBI QUICK 800 | 45 | 1300 |
| COMBI QUICK 1000 | 54 | 1570 |

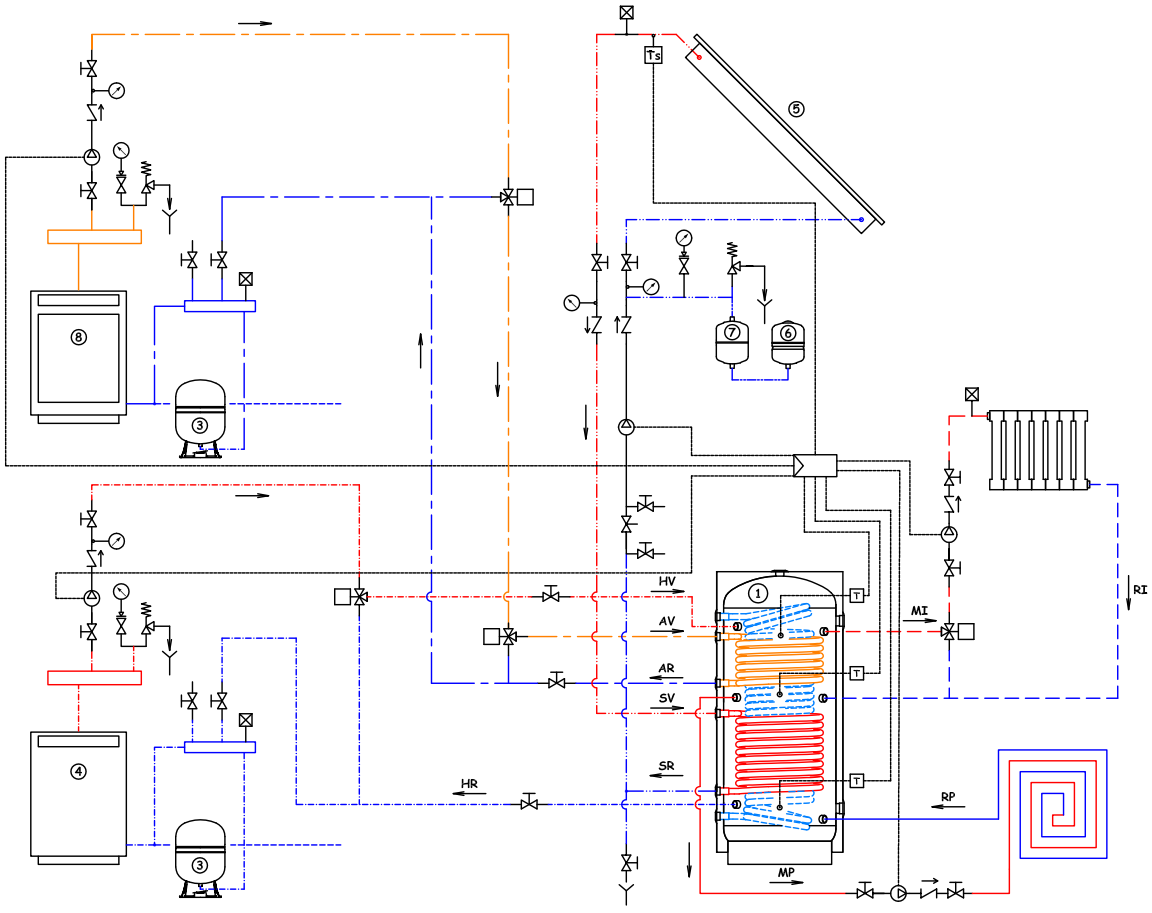
Continuous production of hot water at 45 °C with accumulation at 80 °C

## HYDRAULIC DIAGRAM 1 (COMBI QUICK SANITARY CIRCUIT)

**SEE TABLE OF SYMBOLS IN THE SHUTTER OF THE COVER**




## HYDRAULIC DIAGRAM 2 (COMBI QUICK HEATING AND INTEGRATION CIRCUIT)



DS


BST

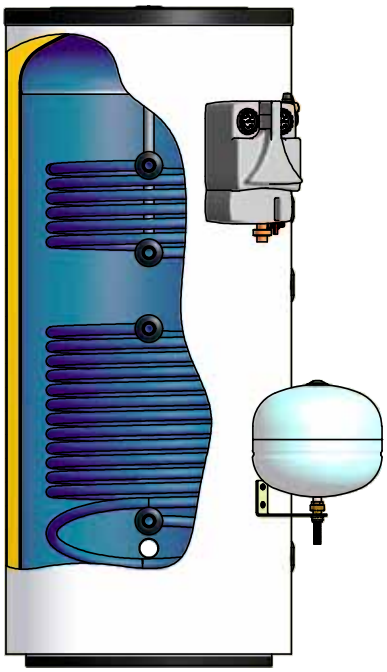


# SOLAR SYSTEM

## GLASSLINED CYLINDERS FOR THERMAL SOLAR

WITH TWO FIXED HEAT EXCHANGERS, WITH BUILT-IN SOLAR KIT (300 - 800 LITRES)

## SOLAR SYSTEM



The SOLAR series is composed of glasslined cylinders with a dual coil, equipped with a solar kit.
These kits are applied to forced circulation solar systems. Their main functions are to enable circulation of the thermal fluid in the primary system, regulate its temperature and guarantee safe pressure increases.

You can choose from 3 solar kit models:
1. Solar kit with expansion tank and 1 way module
2. Solar kit with expansion tank and 2 way module
3. Solar kit with expansion tank and 1 way module with adjustment control unit

- CYLINDER
- FOR SANITARY HOT WATER
- SUITABLE FOR SOLAR SYSTEMS
- ANODE WITH TESTER
- INTERNAL, GLASSLINING ANTI-CORROSION TREATMENT
- POLYURETHANE INSULATION

+ 95°C
MAX TEMPERATURE OF CYLINDER

+ 110°C
EXCHANGER MAX TEMPEARTURE

$P_{MAX}$ 10 bar
MAX WORKING PRESSURE

$P_{SCA}$ 12 bar
HEAT EXCHANGER MAX PRESSURE

**WARRANTY: 5 YEARS**

**INSULATION:**
Expanded polyurethane without CFC and HCFC.

**HEAT EXCHANGER:**
two fixed single-tube coils

**REFERENCE STANDARDS**
**CYLINDER:**
Directive PED 97/23/EC – ART. 3.3, without CE marking
Standard EN 12897:2006

**INTERNAL GLASSLINING:**
DIN 4753
The glasslining treatment makes the cylinder suitable to contain hot water for sanitary and hygienic use and resistant to corrosive phenomena.

**INSULATION:**
· traditional boilers (wall-hung and/or floor-standing)
· condensing boilers
· solar thermal systems

| MODEL | CIRCULATION UNIT | CODE | HEAT EXCHANGER LITRES | LOW. m² | LITRES | UPP. m² | LITRES | mm | mm | NOTES |
|---|---|---|---|---|---|---|---|---|---|---|
| BST-300 / DS-18 | 1 WAY | ASE0L51 00000 | 300 | 1,20 | 8 | 0,75 | 5 | 650 | 1395 | |
| | 2 WAYS | ASE0L51 00005 | | | | | | | | |
| | 2 WAYS WITH CTRL UNIT | ASE0L51 00010 | | | | | | | | |
| BST-400 / DS-24 | 1 WAY | ASE0L53 00000 | 400 | 1,40 | 9 | 0,90 | 6 | 750 | 1445 | |
| | 2 WAYS | ASE0L53 00005 | | | | | | | | |
| | 2 WAYS WITH CTRL UNIT | ASE0L53 00010 | | | | | | | | |
| BST-500 / DS-24 | 1 WAY | ASE0L55 00000 | 500 | 1,80 | 12 | 0,90 | 6 | 750 | 1695 | |
| | 2 WAYS | ASE0L55 00005 | | | | | | | | |
| | 2 WAYS WITH CTRL UNIT | ASE0L55 00010 | | | | | | | | |
| BST-800 / DS-35 | 1 WAY | ASE0L60 00000 | 800 | 2,00 | 13 | 1,20 | 8 | 900 | 1795 | |
| | 2 WAYS | ASE0L60 00005 | | | | | | | | |
| | 2 WAYS WITH CTRL UNIT | ASE0L60 00010 | | | | | | | | |

| PARTS OF SOLAR SYSTEM | 1 WAY SOLAR MODULE | 2 WAY SOLAR MODULE | 2 WAY SOLAR MODULE WITH ADJUSTMENT CONTROL UNIT |
|---|---|---|---|
| Solar expansion tank | ● | ● | ● |
| Circulating pump | ● | ● | ● |
| Flowmeter with filling and drain valve | ● | ● | ● |
| Manometer | ● | ● | ● |
| 6 bar security unit with connection to the expansion tank | ● | ● | ● |
| Thermometer on the return way | ● | ● | ● |
| Checkball valve on the return way | ● | ● | ● |
| Thermometer on the supply way | X | ● | ● |
| Checkball valve on the supply way | X | ● | ● |
| Manual air vent | X | ● | ● |
| Control unit | X | X | ● |

## SOLAR MODULES

| 1 WAY SOLAR MODULE | 2 WAY SOLAR MODULE | 2 WAY SOLAR MODULE WITH ADJUSTMENT CONTROL UNIT | ADJUSTMENT CONTROL UNIT |
|---|---|---|---|
|  |  |  |  |

## TECHNICAL CHARACTERISTICS OF SOLAR SYSTEM CIRCULATION UNITS

| | | |
|---|---|---|
| Maximum working pressure: | 10 bar | |
| Maximum working temperature: | 120 °C (160 °C for 20 sec) | |
| Connections: | 3/4" Male | |
| Insulation box in EPP: | 1 way solar module | Dimensions 155x425x150 mm |
| | 2 way solar module | Dimensions 250x380x190 mm |
| | 2 way solar module with control unit | Dimensions 308x434x169 mm |
| Flowmeter: | 2 - 12 litres/minute | For BST SOLAR 300, 400, 500 models |
| | 8 - 28 litres/minute | For BST SOLAR 800 models |
| Warranty | 2 years | |

## TECHNICAL CHARACTERISTICS OF THE ADJUSTMENT CONTROL UNITS

The adjustment control units enable efficient control of solar system and/or heating functioning thanks to:

- Graphics and texts on display
- Easy data control
- Analysis and monitoring of system via statistical graphics
- Ample setting menus with explanations
- Password to protect menus
- Re-setting of previous or factory parameters function
- Warranty 2 years

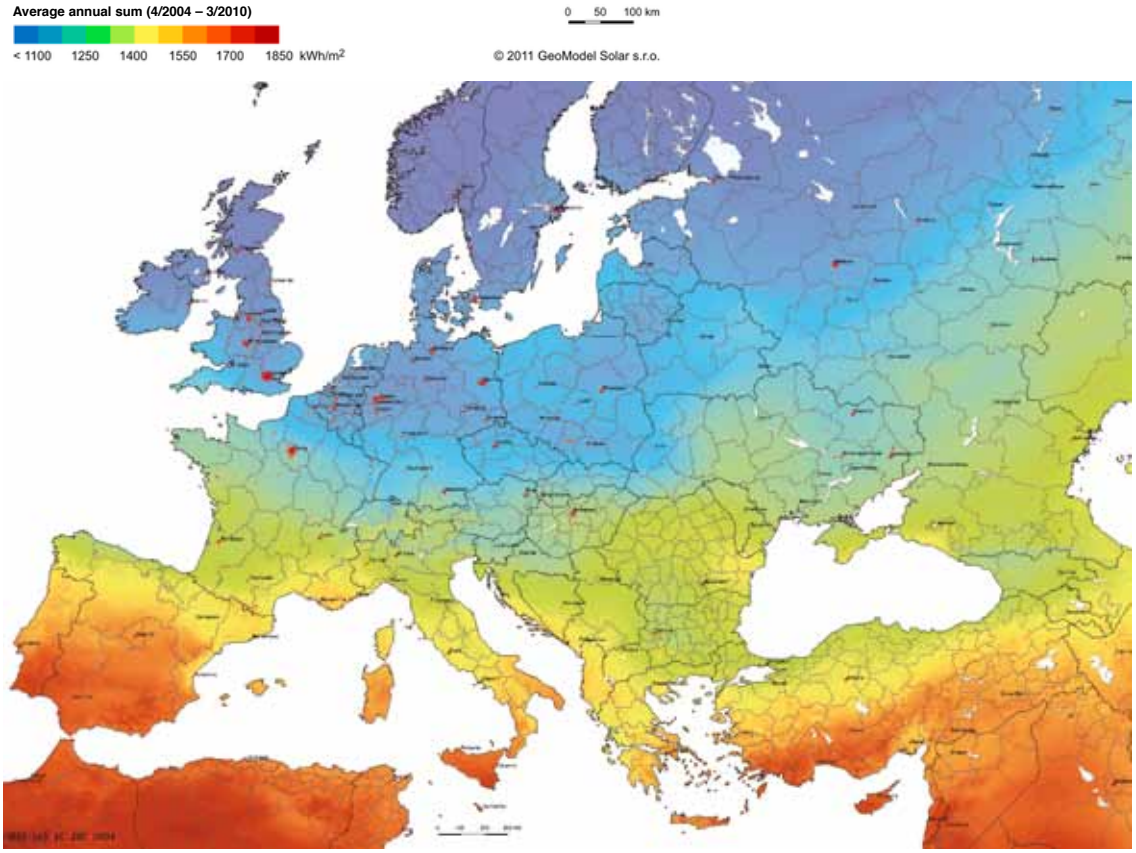
## WARRANTY OF INDIVIDUAL PARTS

| | |
|---|---|
| BST SERIES CYLINDER | 5 YEARS |
| DS SERIES EXPANSION TANK | 2 YEARS |
| SOLAR MODULE | 2 YEARS |

SOLAR CYLINDERS ARE SELECTED BASED ON MULTIPLE FACTORS THAT CAN BE BRIEFLY SUMMARISED AS FOLLOWS:

- SANITARY HOT WATER REQUIRED
- SUNLIGHT
- CYLINDER CAPACITY FOR THE NUMBER OF PEOPLE
- SOLAR COLLECTOR SURFACE FOR CYLINDER CAPACITY

## SOLAR LIGHT:
## LEVEL OF SUNLIGHT PER YEAR IN EUROPE (kWh/m²)




### CYLINDER MODEL PER NUMBER OF PEOPLE:

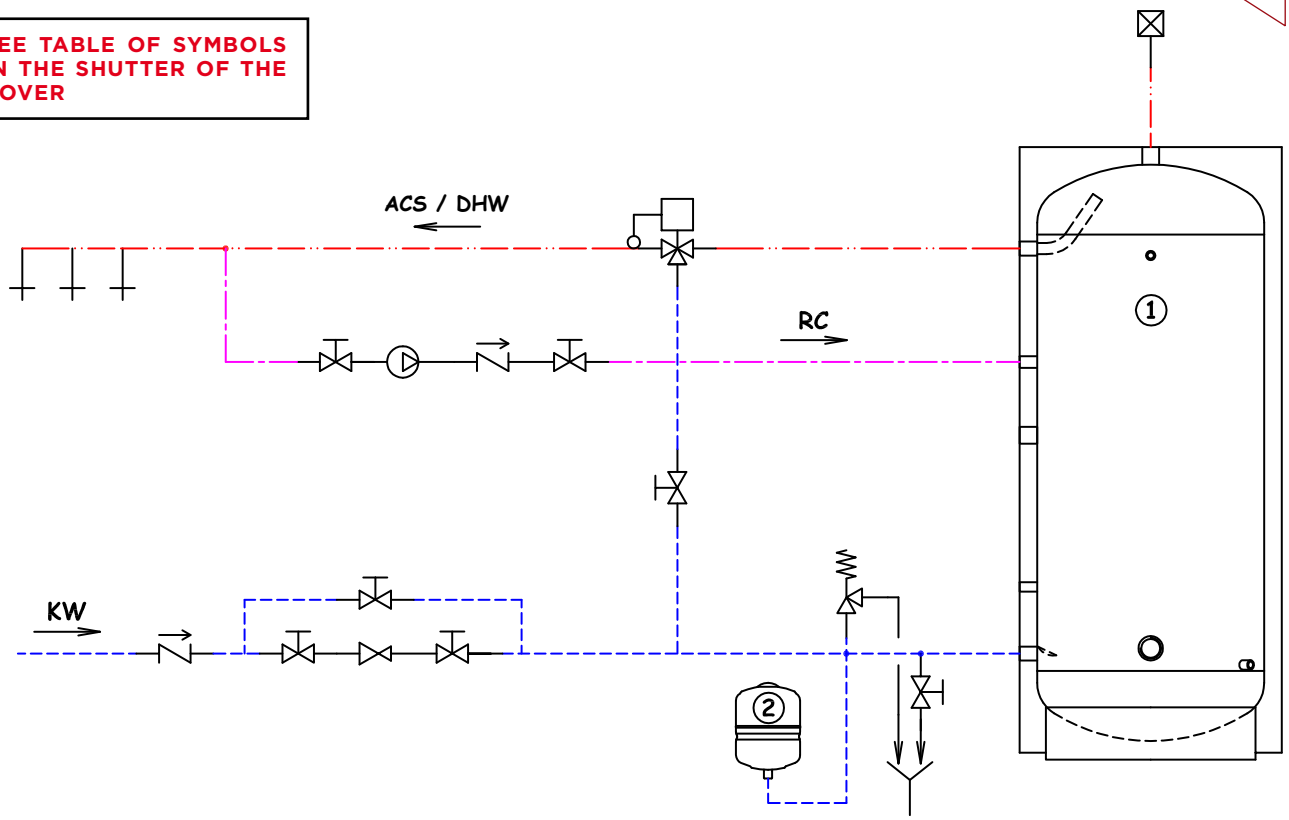
| MODEL | Number of people |
|---|---|
| BST-300 / DS-18 | 2 - 4 |
| BST-400 / DS-24 | 3 - 5 |
| BST-500 / DS-24 | 5 - 7 |
| BST-800 / DS-35 | max. 10 |

### SOLAR COLLECTOR SURFACE TO COMBINE WITH THE SELECTED MODEL:

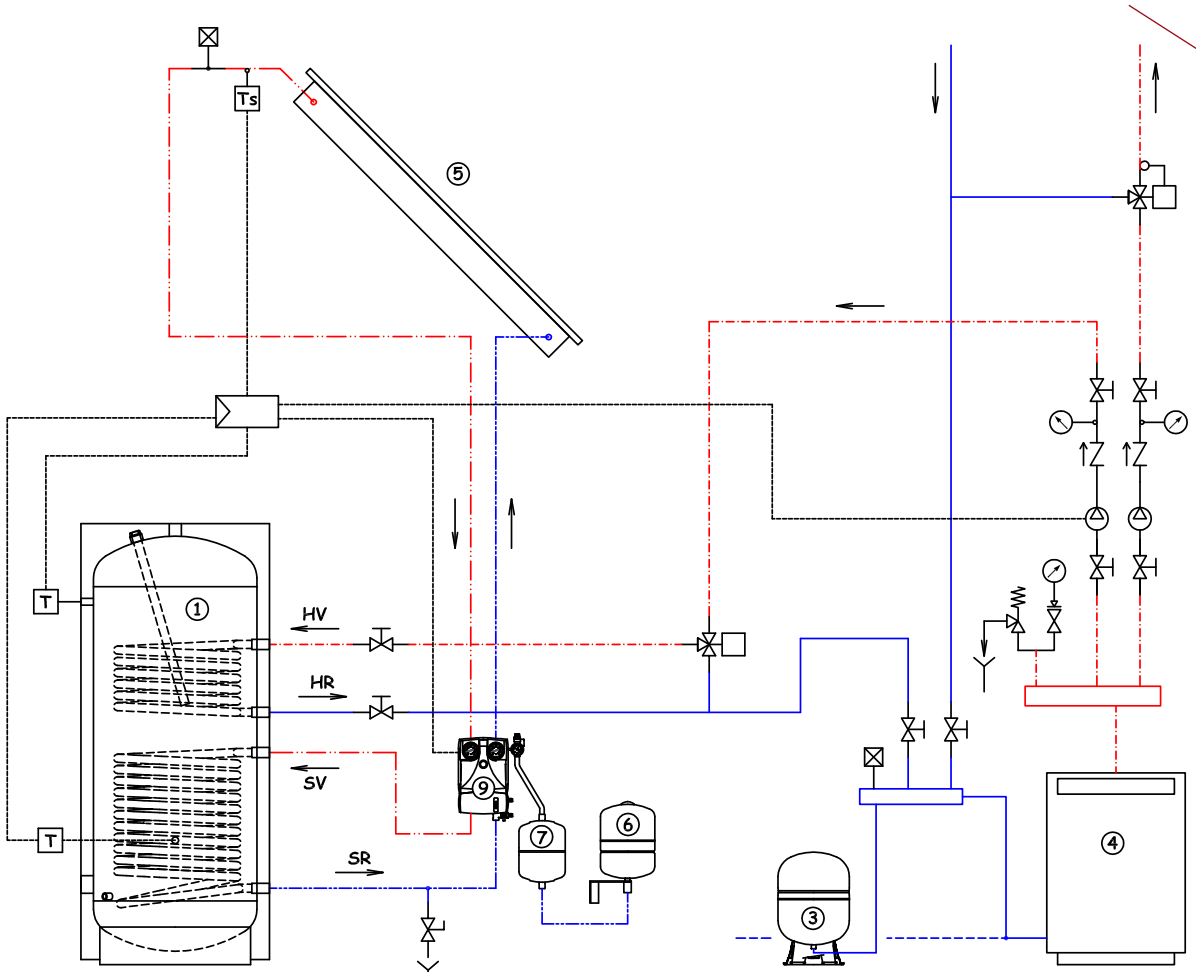
| MODEL | Solar collector surface (m²) |
|---|---|
| BST-800 / DS-35 | 2.5 |
| BST-800 / DS-35 | 5 |
| BST-800 / DS-35 | 7.5 |
| BST-800 / DS-35 | 12,5 |

## HYDRAULIC DIAGRAM 1 (SOLAR SANITARY CIRCUIT)

**SEE TABLE OF SYMBOLS IN THE SHUTTER OF THE COVER**



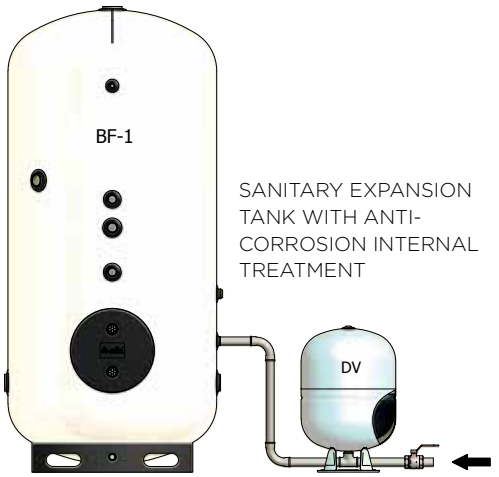

## HYDRAULIC DIAGRAM 2 (SOLAR CIRCULT PLUS BOILER)



# BF1

## GLASSLINED CYLINDERS

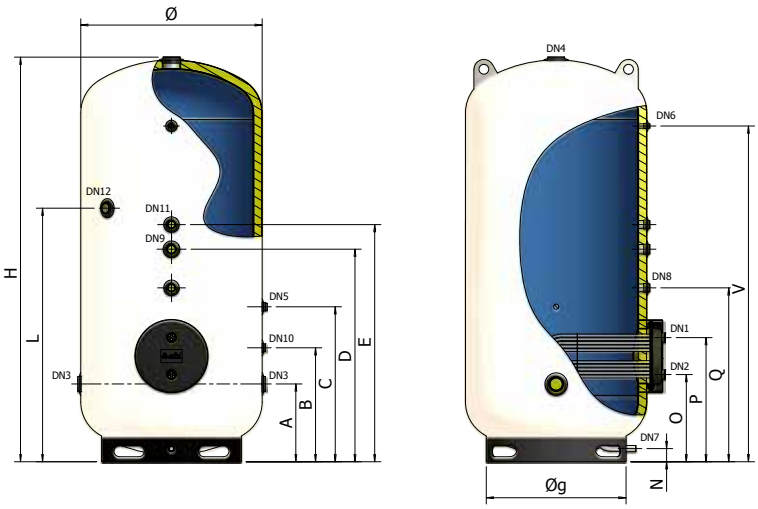
WITH REMOVABLE STAINLESS STEEL HEAT EXCHANGER (1.500 - 5.000 LITRES)




SANITARY EXPANSION TANK WITH ANTI-CORROSION INTERNAL TREATMENT

SANITARY COLD WATER

## BF1 1500 - 2000 - 3000 - 5000




**KEYWORD**

**DN1:** Primary fluid inlet (heating side); **DN2:** Primary fluid outlet (heating side); **DN5:** Sanitary cold water inlet; **DN6:** Sanitary hot water outlet; **DN7:** Magnesium anode; **DN8:** Probes (Thermometer, Thermostat); **DN9:** Tank drain; **DN10:** Thermo-regulation; **DN11:** Recirculation.

- CYLINDER
- FOR SANITARY HOT WATER
- SUITABLE FOR SOLAR SYSTEMS
- INTERNAL, GLASSLINING ANTI-CORROSION TREATMENT
- POLYURETHANE INSULATION
- HEAT EXCHANGER IN STAINLESS STEEL AISI 304
- HANDLING BY FORKLIFT

+ 95°C
WORKING TEMPERATURE

+110°C
HEAT EXCHANGER MAX TEMPERATURE

$P_{MAX}$ 6 bar
MAX WORKING PRESSURE

$P_{SCA}$ 12 bar
HEAT EXCHANGER MAX PRESSURE

**WARRANTY: 5 YEARS**

**INSULATION:**
Expanded, flexible polyurethane with open cells.

**HEAT EXCHANGER:**
Removable U pipe stainless steel heat exchanger.

**REFERENCE STANDARDS**
**CYLINDER:**
Directive PED 97/23/EC – ART. 3.3, without CE marking
Standard EN 12897:2006

**INTERNAL GLASSLINING:**
DIN 4753
The glasslining treatment makes the cylinder suitable to contain hot water for sanitary and hygienic use and resistant to corrosive phenomena.

**INSTALLATION:**
· traditional boilers (wall-hung and/or floor-standing)
· condensing boilers
· solar thermal systems

| MODEL | CODE | | LOWER HEAT EXCHANGER | | | | NOTES |
|---|---|---|---|---|---|---|---|
| | | LITRES | m² | LITRES | mm | mm | |
| BF-1 / 1500 | A340H67 VW050 | 1500 | 3,00 | 15 | 1100 | 2465 | |
| BF-1 / 2000 | A340H70 VW050 | 2000 | 4,00 | 18 | 1200 | 2445 | |
| BF-1 / 3000 | A340H74 VW050 | 3000 | 6,00 | 24 | 1350 | 2840 | |
| BF-1 / 5000 | A340H80 VW050 | 5000 | 10,00 | 39 | 1700 | 3045 | |

| MODEL | ANODE ø x ø conn. x L | DN 1 | DN 2 | DN 3 | DN 4 | DN 5 | DN 6 | DN 7 | DN 8 | DN 9 | DN 10 | DN 11 | DN 12 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| BF-1 / 1500 | 32 x 1.1/4“ x 670 | 1.1/2” | 1.1/2” | 2.1/2“ | 3“ | 1.1/4” | 1/2“ | 1” | 1.1/4” | 1.1/2” | 1.1/4” | 1.1/4” | 2” |
| BF-1 / 2000 | 32 x 1.1/4“ x 670 | 1.1/2” | 1.1/2” | 2.1/2“ | 3“ | 1.1/4” | 1/2“ | 1” | 1.1/4” | 1.1/2” | 1.1/4” | 1.1/4” | 2” |
| BF-1 / 3000 | 32 x 1.1/4“ x 700 | 1.1/2” | 1.1/2” | 3“ | 3“ | 1.1/2“ | 1/2“ | 1” | 1.1/4” | 1.1/2” | 1.1/4” | 1.1/4” | 2” |
| BF-1 / 5000 | 40 x 1.1/2“ x 640 | 1.1/2” | 1.1/2” | 3“ | 3“ | 1.1/2“ | 1/2“ | 1” | 1.1/4” | 1.1/2” | 1.1/4” | 1.1/4” | 2” |

| MODEL | A mm | B mm | C mm | D mm | E mm | F mm | G mm | I mm | L mm | M mm | N mm | O mm | P mm | Q mm | R mm | S mm | T mm | U mm | V mm |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| BF-1 / 1500 | 475 | 695 | 945 | 1295 | 1445 | - | - | - | 1545 | - | 80 | 530 | 755 | 1060 | - | - | - | - | 2045 |
| BF-1 / 2000 | 465 | 685 | 935 | 1285 | 1435 | - | - | - | 1535 | - | 80 | 520 | 745 | 1050 | - | - | - | - | 2035 |
| BF-1 / 3000 | 530 | 730 | 980 | 1480 | 1630 | - | - | - | 1730 | - | 80 | 565 | 790 | 1095 | - | - | - | - | 2380 |
| BF-1 / 5000 | 635 | 835 | 1085 | 1585 | 1735 | - | - | - | 1835 | - | 80 | 670 | 895 | 1200 | - | - | - | - | 2485 |

## TECHNICAL CHARACTERISTICS

| HEAT EXCHANGER | CODE | MAXIMUM WORKING PRESSURE / MAXIMUM WORKING TEMPERATURE | | PRESSURE DROP OF HEAT EXCHANGERS |
|---|---|---|---|---|
| | | HOT WATER 12 BAR / 110 °C | SATURATED STEAM 2 BAR / 134 °C | |
| 3,0 m² | 2950300 V0010 | • | • | 200 mbar |
| 4,0 m² | 2950400 V0010 | • | • | 220 mbar |
| 6,0 m² | 2960600 V0010 | • | • | 350 mbar |
| 10,0 m² | 2961000 V0010 | • | • | 400 mbar |

N.B. If using the heat exchanger with temperatures over 100 °C, ask for steam seals

| MODEL | INSULATION TYPE | INSULATION THICKNESS | INSULATION DENSITY | INITIAL THERMAL CONDUCTIVITY | (*) INSULATION THERMAL LOSS | EXTERNAL FINISH |
|---|---|---|---|---|---|---|
| BF-1 / 1500 | Flexible expanded polyurethane with open cells | 50 mm | 15 kg/m³ | 39,0 mW/m K | 6,53 kWh / 24h | Skay white RAL 9001 |
| BF-1 / 2000 | | | | | 7,15 kWh / 24h | |
| BF-1 / 3000 | | | | | 9,18 kWh / 24h | |
| BF-1 / 5000 | | | | | 12,27 kWh / 24h | |

(*) Thermal loss calculated with an accumulation temperature equal to 60 °C and with an external temperature equal to 15 °C.

## SAFETY DEVICES

The cylinders must be protected against the effects of over pressure by installing:
· A **SAFETY VALVE** calibrated to pressure below the max pressure of the cylinder
· A **SANITARY EXPANSION TANK** mod. ELBI **D – DV series**

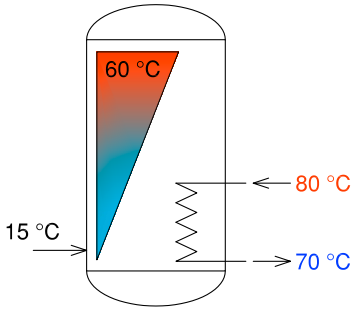
| MODEL | RECOMMENDED SANITARY EXPANSION TANK (mod. ELBI D-DV series) |
|---|---|
| BF-1 / 1500 | DV – 150 |
| BF-1 / 2000 | DV – 150 |
| BF-1 / 3000 | DV – 300 |
| BF-1 / 5000 | n°2 pcs DV – 200 |

Sized using the following parameters: T. accumulation= 85 °C / T. inlet = 15 °C / Pre-charge pressure = 3 bar / Max pressure = 6 bar
*The recommended capacity must be verified on the basis of the actual dimensions of the system implemented.*

| MODEL | MAGNESIUM ANODE SUPPLIED | CATHODIC PROTECTION APPLICABLE |
|---|---|---|
| BF-1 / 1500 | 1.1/4" x 670 / Cod.8560070 | Cathodic protection for cylinders 1500/2000 l. Code 8560180 |
| BF-1 / 2000 | 1.1/4" x 670 / Cod.8560070 | |
| BF-1 / 3000 | 1.1/4" x 700 / Cod.8560080 | Cathodic protection for cylinders 3000/5000 l. Code 8560185 |
| BF-1 / 5000 | 1.1/2" x 640 / Cod.8560100 | |

## ACCUMULATION AT 60 °C

**HEAT EXCHANGER:** T.inlet = 80°C; ΔT = 10°C.
**STORAGE WATER HEATER:** T.inlet =15°C; T. accumulation = 60°C



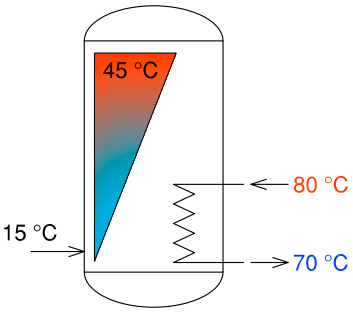

**OPERATION WITH HOT WATER**

| MODEL | HEAT EXCHANGER [m²] | THERMAL POWER [kW] | PUMP CAPACITY [l/hour] | HEATING TIME(1) [min] | PRODUCTION DHW AT 60°C [l/hour] | QUANTITY DHW AT 45°C IN FIRST 10 min. (2) [l] |
|---|---|---|---|---|---|---|
| BF-1 / 1500 | 3,0 | 72,00 | 6400 | 70 | 1375 | 1243 |
| BF-1 / 2000 | 4,0 | 98,00 | 8500 | 63 | 1828 | 1594 |
| BF-1 / 3000 | 6,0 | 159,30 | 14100 | 58 | 3044 | 2524 |
| BF-1 / 5000 | 10,0 | 250,70 | 22000 | 62 | 4790 | 4085 |

(1) Time required to bring the temperature of the cylinder from 15 °C to 60 °C.
(2) Quantity of DHW (Sanitary Hot Water) at 45°C available in the first 10 minutes with DHW accumulation at 60° C.

## ACCUMULATION AT 45 °C

**HEAT EXCHANGER:** T.inlet = 80°C; ΔT = 10°C.
**STORAGE WATER HEATER:** T.inlet =15°C; T. accumulation = 45°C



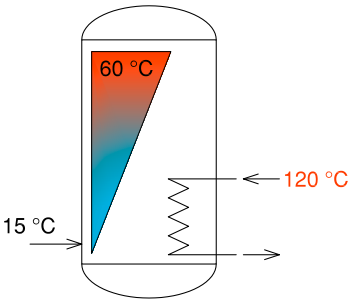

**OPERATION WITH HOT WATER**

| MODEL | HEAT EXCHANGER [m²] | THERMAL POWER [kW] | PUMP CAPACITY [l/hour] | HEATING TIME(1) [min] | PRODUCTION DHW AT 45°C [l/hour] |
|---|---|---|---|---|---|
| BF-1 / 1500 | 3,0 | 92,00 | 8100 | 37 | 2635 |
| BF-1 / 2000 | 4,0 | 131,60 | 11600 | 31 | 3770 |
| BF-1 / 3000 | 6,0 | 223,60 | 19710 | 28 | 6410 |
| BF-1 / 5000 | 10,0 | 339,00 | 29900 | 31 | 9720 |

1) Time required to bring the temperature of the cylinder from 15 °C to 45 °C.

## ACCUMULATION AT 60 °C

**HEAT EXCHANGER:** T.inlet = 120°C (1 bar)
**STORAGE WATER HEATER:** T.inlet =15°C; T. accumulation = 60°C



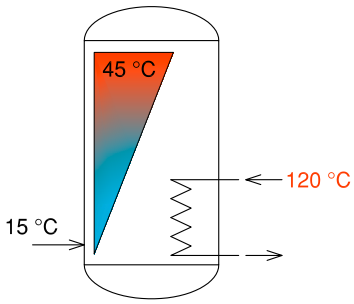

**OPERATION WITH STEAM**

| MODEL | HEAT EXCHANGER [m²] | THERMAL POWER [kW] | PUMP CAPACITY [l/hour] | HEATING TIME(1) [min] | PRODUCTION DHW AT 60°C [l/hour] | QUANTITY DHW AT 45°C IN FIRST 10 min. |
|---|---|---|---|---|---|---|
| BF-1 / 1500 | 3,0 | 236,00 | 400 | 21 | 4600 | 2070 |
| BF-1 / 2000 | 4,0 | 287,00 | 486 | 22 | 5575 | 2470 |
| BF-1 / 3000 | 6,0 | 440,30 | 754 | 21 | 8400 | 3820 |
| BF-1 / 5000 | 10,0 | 675,70 | 1143 | 23 | 12890 | 6020 |

(1) Time required to bring the temperature of the cylinder from 15 °C to 60 °C.
(2) Quantity of DHW (Sanitary Hot Water) at 45°C available in the first 10 minutes with DHW accumulation at 60° C.

## ACCUMULATION AT 45 °C

**HEAT EXCHANGER:** T.inlet = 120°C (1 Bar)
**STORAGE WATER HEATER:** T.inlet =15°C; T. accumulation = 45°C



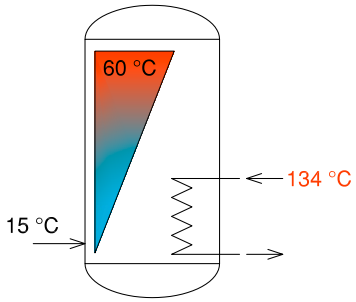

**OPERATION WITH STEAM**

| MODEL | HEAT EXCHANGER [m²] | THERMAL POWER [kW] | PUMP CAPACITY [l/hour] | HEATING TIME(1) [min] | PRODUCTION DHW AT 60°C [l/hour] |
|---|---|---|---|---|---|
| BF-1 / 1500 | 3,0 | 265,60 | 450 | 13 | 7615 |
| BF-1 / 2000 | 4,0 | 315,70 | 534 | 14 | 9048 |
| BF-1 / 3000 | 6,0 | 495,00 | 839 | 13 | 14185 |
| BF-1 / 5000 | 10,0 | 745,00 | 1263 | 14 | 21350 |

(1) Time required to bring the temperature of the cylinder from 15 °C to 45 °C.

## ACCUMULATION AT 60 °C

**HEAT EXCHANGER:** T.inlet = 134°C (2 bar)
**STORAGE WATER HEATER:** T.inlet = 15°C; T. accumulation = 60°C



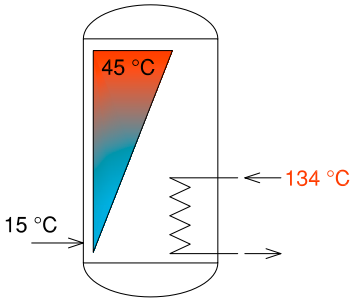

**OPERATION WITH STEAM**

| MODEL | HEAT EXCHANGER [m²] | THERMAL POWER [kW] | PUMP CAPACITY [l/hour] | HEATING TIME(1) [min] | PRODUCTION DHW AT 60°C [l/hour] | Quantity DHW AT 45°C in first 10 min(2) [l] |
|---|---|---|---|---|---|---|
| BF-1 / 1500 | 3,0 | 278,00 | 479 | 19 | 5310 | 5310 |
| BF-1 / 2000 | 4,0 | 338,00 | 583 | 18 | 6458 | 6458 |
| BF-1 / 3000 | 6,0 | 525,00 | 905 | 18 | 10030 | 10030 |
| BF-1 / 5000 | 10,0 | 790,00 | 1362 | 20 | 15095 | 15095 |

(1) Time required to bring the temperature of the cylinder from 15 °C to 60 °C.
(2) Quantity of DHW (Sanitary Hot Water) at 45°C available in the first 10 minutes with DHW accumulation at 60° C.

## ACCUMULATION AT 45 °C

**HEAT EXCHANGER:** T.inlet = 134°C (2 bar)
**STORAGE WATER HEATER:** T.inlet = 15°C; T. accumulation = 45°C




**OPERATION WITH STEAM**

| MODEL | HEAT EXCHANGER [m²] | THERMAL POWER [kW] | PUMP CAPACITY [l/hour] | HEATING TIME(1) [min] | PRODUCTION DHW AT 45°C [l/hour] |
|---|---|---|---|---|---|
| BF-1 / 1500 | 3,0 | 306,30 | 528 | 11 | 8780 |
| BF-1 / 2000 | 4,0 | 369,20 | 636 | 11 | 10580 |
| BF-1 / 3000 | 6,0 | 645,00 | 1112 | 10 | 18485 |
| BF-1 / 5000 | 10,0 | 820,00 | 1415 | 13 | 23500 |

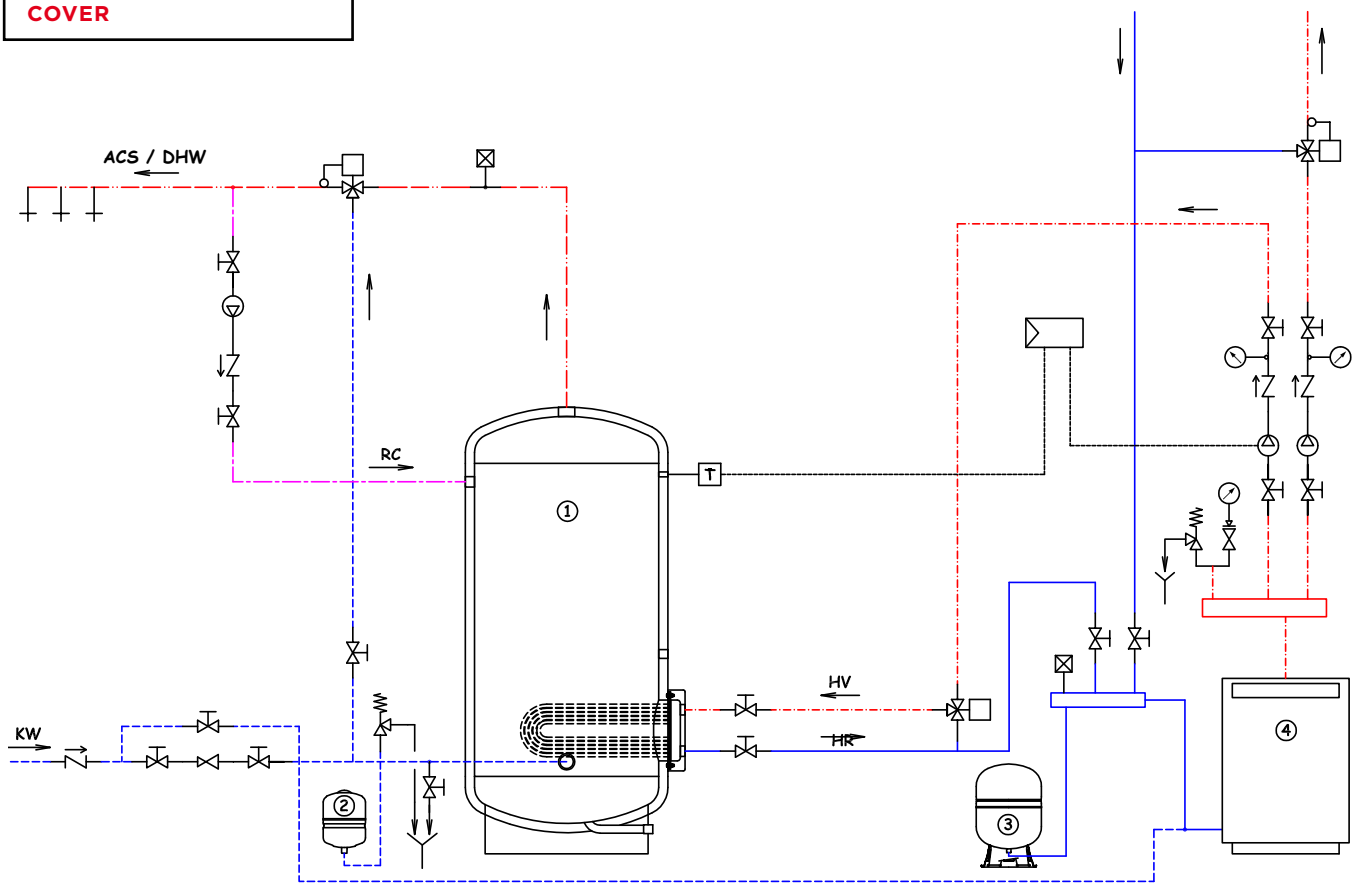
(1) Time required to bring the temperature of the cylinder from 15 °C to 45 °C.

## TABLE OF HEATING ELEMENT APPLICABILITY TO CYLINDERS

| Heating element model* | | | | | Water heating time from 15° C to 60 °C (expressed in minutes) *The heating times outlined are approximate* | | | |
|---|---|---|---|---|---|---|---|---|
| CODE | Power (kW) | Voltage (Volt) | Connection | Length (mm) | BF-1 1500 | BF-1 2000 | BF-1 3000 | BF-1 5000 |
| 8601000 | 1 | 220 V / MF | G 1.1/4" | 295 | 4720 min. | 6300 min. | 9420 min. | 15750 min. |
| 8601650 | 1.65 | 220 V / MF | G 1.1/4" | 450 | 2870 min. | 3820 min. | 5740 min. | 9550 min. |
| 8602000 | 2 | 220 V / MF | G 1.1/4" | 515 | 2370 min. | 3150 min. | 4740 min. | 7875 min. |
| 8602600 | 2.6 | 220 V / MF | G 1.1/4" | 675 | 1830 min. | 2450 min. | 3660 min. | 6125 min. |
| 8602601 | 2.6 | 220 V / MF | G 1.1/4" | 360 | 1830 min. | 2450 min. | 3660 min. | 6125 min. |
| 8603300 | 3.3 | 220 V / MF | G 1.1/4" | 825 | 1450 min. | 1940 min. | 2900 min. | 4850 min. |
| 8603301 | 3.3 | 220 V / MF | G 1.1/4" | 435 | 1450 min. | 1940 min. | 2900 min. | 4850 min. |
| 8604001 | 4 | 220 V / MF | G 1.1/4" | 510 | 1200 min. | 1600 min. | 2400 min. | 4000 min. |
| 8705000 | 5 | 380 V / TF | G 1.1/2" | 445 | 950 min. | 1300 min. | 1900 min. | 3250 min. |
| 8706000 | 6 | 380 V / TF | G 1.1/2" | 510 | 800 min. | 1060 min. | 1600 min. | 2650 min. |
| 8708000 | 8 | 380 V / TF | G 1.1/2" | 670 | 610 min. | 800 min. | 1220 min. | 2000 min. |
| 8710000 | 10 | 380 V / TF | G 1.1/2" | 820 | 490 min. | 640 min. | 980 min. | 1600 min. |
| 8712000 | 12 | 380 V / TF | G 1.1/2" | 970 | 410 min. | 540 min. | 820 min. | 1350 min. |

n.a. =Heating element not applicable

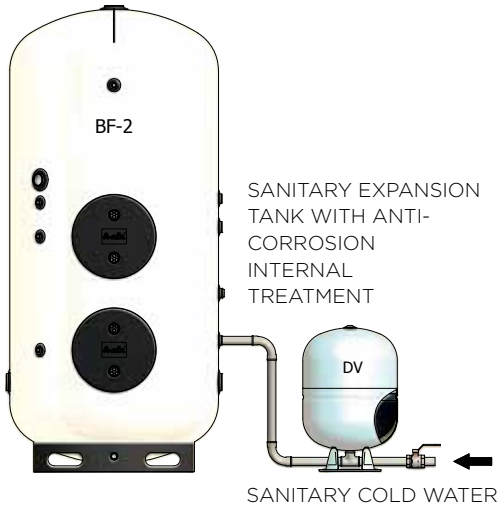
**SEE TABLE OF SYMBOLS IN THE SHUTTER OF THE COVER**



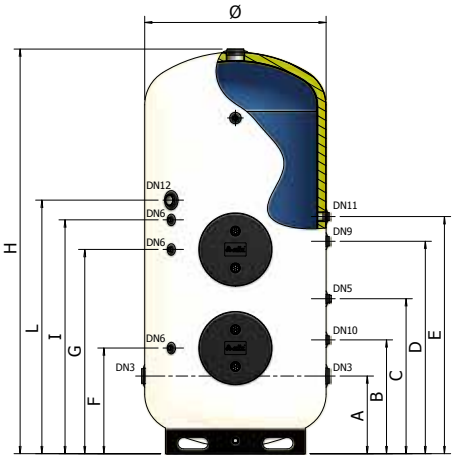
# BF2

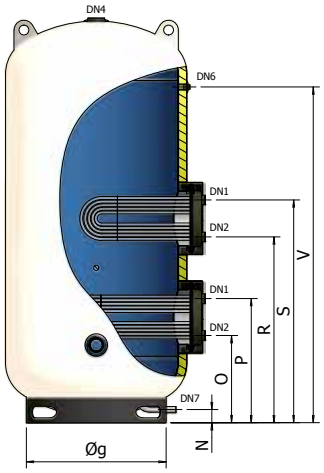
## GLASSLINED CYLINDERS

WITH TWO REMOVABLE STAINLESS STEEL HEAT EXCHANGERS (1.500 – 5.000 LITRES)




## BF2 1500 - 2000 - 3000 - 5000




**KEYWORD**

**DN1:** Primary fluid inlet (heating side); **DN2:** Primary fluid outlet (heating side); **DN5:** Sanitary cold water inlet; **DN6:** Sanitary hot water outlet; **DN7:** Magnesium anode; **DN8:** Probes (Thermometer, Thermostat); **DN9:** Tank drain; **DN11:** Recirculation.

- CYLINDER
- FOR SANITARY HOT WATER
- SUITABLE FOR SOLAR SYSTEMS
- MAGNESIUM ANODE
- INTERNAL, GLASSLINING ANTI-CORROSION TREATMENT
- POLYURETHANE INSULATION
- HEAT EXCHANGER IN STAINLESS STEEL AISI 304
- HANDLING BY FORKLIFT

+ 95°C
WORKING TEMPERATURE

+110°C
HEAT EXCHANGER MAX TEMPERATURE

$P_{MAX}$ 6 bar
MAX WORKING PRESSURE

$P_{SCA}$ 12 bar
HEAT EXCHANGER MAX PRESSURE

**WARRANTY: 5 YEARS**

### INSULATION:

Expanded, flexible polyurethane with open cells.

### HEAT EXCHANGER:

Removable U pipe stainless steel heat exchanger.

### REFERENCE STANDARDS

**CYLINDER:**

Directive PED 97/23/EC – ART. 3.3, without CE marking
Standard EN 12897:2006

**INTERNAL GLASSLINING:**

DIN 4753
The glasslining treatment makes the cylinder suitable to contain hot water for sanitary and hygienic use and resistant to corrosive phenomena.

### INSTALLATION:

· traditional boilers (wall-hung and/or floor-standing)
· condensing boilers
· solar thermal systems

| MODEL | CODE | EXCHANGER | | | | | | | NOTES |
|---|---|---|---|---|---|---|---|---|---|
| | | | LOWER | | CENTRAL | | | | |
| | | LITRES | m² | LITRES | m² | LITRES | mm | mm | |
| BF-2 / 1500 | A370H67 VW050 | 1500 | 4,00 | 18 | 3,00 | 15 | 1100 | 2465 | |
| BF-2 / 2000 | A370H70 VW050 | 2000 | 4,00 | 18 | 4,00 | 18 | 1200 | 2445 | |
| BF-2 / 3000 | A370H74 VW050 | 3000 | 6,00 | 24 | 6,00 | 24 | 1350 | 2840 | |
| BF-2 / 5000 | A370H80 VW050 | 5000 | 10,00 | 39 | 10,00 | 39 | 1700 | 3045 | |

| MODEL | ANODE ø x ø conn. x L | DN 1 | DN 2 | DN 3 | DN 4 | DN 5 | DN 6 | DN 7 | DN 8 | DN 9 | DN 10 | DN 11 | DN 12 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| BF-2 / 1500 | 32 x 1.1/4“ x 670 | 1.1/2” | 1.1/2” | 2.1/2“ | 3“ | 1.1/4” | 1/2“ | 1” | - | 1.1/2” | 1.1/4” | 1.1/4” | 2” |
| BF-2 / 2000 | 32 x 1.1/4“ x 670 | 1.1/2” | 1.1/2” | 2.1/2“ | 3“ | 1.1/4” | 1/2“ | 1” | - | 1.1/2” | 1.1/4” | 1.1/4” | 2” |
| BF-2 / 3000 | 32 x 1.1/4“ x 700 | 1.1/2” | 1.1/2” | 3“ | 3“ | 1.1/2“ | 1/2“ | 1” | - | 1.1/2” | 1.1/4” | 1.1/4” | 2” |
| BF-2 / 5000 | 40 x 1.1/2“ x 640 | 1.1/2” | 1.1/2” | 3“ | 3“ | 1.1/2“ | 1/2“ | 1” | - | 1.1/2” | 1.1/4” | 1.1/4” | 2” |

| MODEL | A mm | B mm | C mm | D mm | E mm | F mm | G mm | I mm | L mm | M mm | N mm | O mm | P mm | Q mm | R mm | S mm | T mm | U mm | V mm |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| BF-2 / 1500 | 475 | 695 | 945 | 1295 | 1445 | 645 | 1245 | 1425 | 1545 | - | 80 | 530 | 755 | - | 1130 | 1355 | - | - | 2045 |
| BF-2 / 2000 | 465 | 685 | 935 | 1285 | 1435 | 635 | 1235 | 1415 | 1535 | - | 80 | 520 | 745 | - | 1120 | 1345 | - | - | 2035 |
| BF-2 / 3000 | 530 | 730 | 980 | 1480 | 1630 | 680 | 1280 | 1520 | 1730 | - | 80 | 565 | 790 | - | 1165 | 1390 | - | - | 2380 |
| BF-2 / 5000 | 635 | 835 | 1085 | 1585 | 1735 | 785 | 1385 | 1625 | 1835 | - | 80 | 670 | 895 | - | 1270 | 1495 | - | - | 2485 |

## TECHNICAL CHARACTERISTICS

| HEAT EXCHANGER | CODE | MAXIMUM WORKING PRESSURE / MAXIMUM WORKING TEMPERATURE | | PRESSURE DROP OF HEAT EXCHANGERS |
|---|---|---|---|---|
| | | HOT WATER 12 BAR / 110 °C | SATURATED STEAM 2 BAR / 134 °C | |
| 3,0 m² | 2950300 V0010 | • | • | 200 mbar |
| 4,0 m² | 2950400 V0010 | • | • | 220 mbar |
| 6,0 m² | 2960600 V0010 | • | • | 350 mbar |
| 10,0 m² | 2964000 V0010 | • | • | 400 mbar |

N.B. If using the heat exchanger with temperatures over 100 °C, ask for steam seals

| MODEL | INSULATION TYPE | INSULATION THICKNESS | INSULATION DENSITY | INITIAL THERMAL CONDUCTIVITY | (*) INSULATION THERMAL LOSS | EXTERNAL FINISH |
|---|---|---|---|---|---|---|
| BF-2 / 1500 | Flexible. expanded polyurethane with open cells | 50 mm | 15 kg/m³ | 39 mW/m K | 6,53 kWh / 24h | Skay white RAL 9001 |
| BF-2 / 2000 | | | | | 7,15 kWh / 24h | |
| BF-2 / 3000 | | | | | 9,18 kWh / 24h | |
| BF-2 / 5000 | | | | | 12,27 kWh / 24h | |

(*) Thermal loss calculated with an accumulation temperature equal to 60 °C and with an external temperature equal to 15 °C.

## SAFETY DEVICES

The cylinders must be protected against the effects of over pressure by installing:
· A **SAFETY VALVE** calibrated to pressure below the max pressure of the cylinder
· A **SANITARY EXPANSION TANK** mod. ELBI **D – DV series**

| MODEL | RECOMMENDED SANITARY EXPANSION TANK (mod. ELBI D-DV series) |
|---|---|
| BF-2 / 1500 | DV – 150 |
| BF-2 / 2000 | DV – 150 |
| BF-2 / 3000 | DV – 300 |
| BF-2 / 5000 | n°2 pcs DV – 200 |

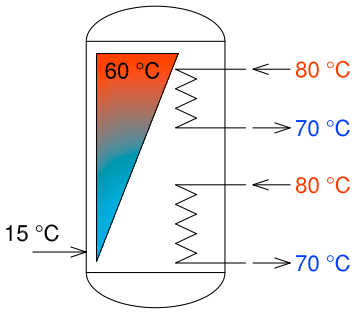
Sized using the following parameters: T. accumulation= 85 °C / T. inlet = 15 °C / Pre-charge pressure = 3 bar / Max pressure = 6 bar
*The recommended capacity must be verified on the basis of the actual dimensions of the system implemented.*

| MODEL | MAGNESIUM ANODE SUPPLIED | CATHODIC PROTECTION APPLICABLE |
|---|---|---|
| BF-2 / 1500 | 1.1/4" x 670 / Cod.8560070 | Cathodic protection for cylinders 1500/2000 l. Code 8560180 |
| BF-2 / 2000 | 1.1/4" x 670 / Cod.8560070 | |
| BF-2 / 3000 | 1.1/4" x 700 / Cod.8560080 | Cathodic protection for cylinders 3000/5000 l. Code 8560185 |
| BF-2 / 5000 | 1.1/2" x 640 / Cod.8560100 | |

## THERMAL YIELD

**ACCUMULATION AT 60 °C**
**HEAT EXCHANGER:** T.inlet = 80°C; ΔT = 10°C.
**STORAGE WATER HEATER:** T.inlet =15°C; T. accumulation = 60°C

**OPERATION WITH HOT WATER**

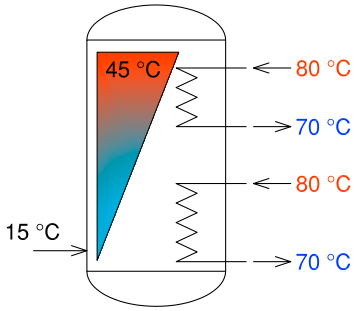



| MODEL | HEAT EXCHANGER [m²] | THERMAL POWER [kW] | PUMP CAPACITY [l/hour] | HEATING TIME(1) [min] | PRODUCTION DHW AT 60°C [l/hour] | Quantity DHW AT 45°C in first 10 min(2) [l] |
|---|---|---|---|---|---|---|
| BF-2 / 1500 | 3,0 | 72,00 | 6400 | 30 | 3203 | 1822 |
| | 4,0 | 98,00 | 8500 | | | |
| BF-2 / 2000 | 4,0 | 98,00 | 8500 | 32 | 3656 | 2230 |
| | 4,0 | 98,00 | 8500 | | | |
| BF-2 / 3000 | 6,0 | 159,30 | 14100 | 29 | 6088 | 3607 |
| | 6,0 | 159,30 | 14100 | | | |
| BF-2 / 5000 | 10,0 | 250,70 | 22000 | 31 | 9580 | 5715 |
| | 10,0 | 250,70 | 22000 | | | |

(1) Time required to bring the temperature of the cylinder from 15 °C to 60 °C.
(2) Quantity of DHW (Sanitary Hot Water) at 45°C available in the first 10 minutes with DHW acccumulation at 60° C.

**ACCUMULATION AT 45 °C**
**HEAT EXCHANGER:** T.inlet = 80°C; ΔT = 10°C.
**STORAGE WATER HEATER:** T.inlet =15°C; T. accumulation = 45°C

**OPERATION WITH HOT WATER**




| MODEL | HEAT EXCHANGER [m²] | THERMAL POWER [kW] | PUMP CAPACITY [l/hour] | HEATING TIME(1) [min] | PRODUCTION DHW AT 60°C [l/hour] |
|---|---|---|---|---|---|
| BF-2 / 1500 | 3,0 | 92,00/ | 8100 | 16 | 6135 |
| | 4,0 | 131,60 | 11600 | | |
| BF-2 / 2000 | 4,0 | 131,60 | 11600/ | 16 | 7540 |
| | 4,0 | 131,60 | 11600 | | |
| BF-2 / 3000 | 6,0 | 223,60 | 19710 | 14 | 12820 |
| | 6,0 | 223,60 | 19710 | | |
| BF-2 / 5000 | 10,0 | 339,00 | 29900 | 16 | 19440 |
| | 10,0 | 339,00 | 29900 | | |

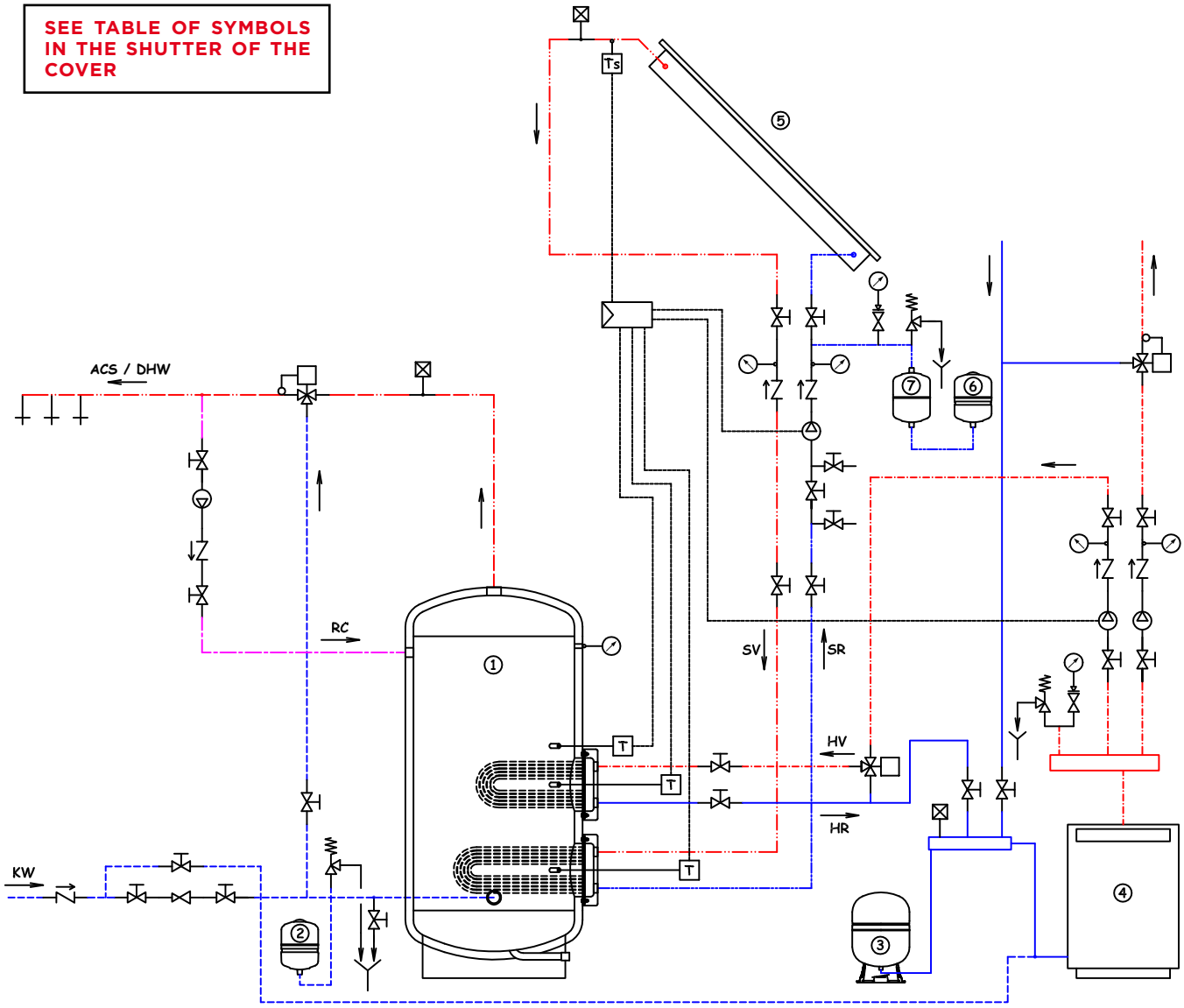
(1) Time required to bring the temperature of the cylinder from 15 °C to 45 °C

## TABLE OF HEATING ELEMENT APPLICABILITY TO CYLINDERS

| Heating element model* | | | | | Water heating time from 15° C to 60 °C (expressed in minutes) *The heating times outlined are approximate* | | | |
|---|---|---|---|---|---|---|---|---|
| CODE | Power (kW) | Voltage (Volt) | Connection | Length (mm) | BF-2 1500 | BF-2 2000 | BF-2 3000 | BF-2 5000 |
| 8601000 | 1 | 220 V / MF | G 1.1/4" | 295 | 4720 min. | 6300 min. | 9420 min. | 15750 min. |
| 8601650 | 1.65 | 220 V / MF | G 1.1/4" | 450 | 2870 min. | 3820 min. | 5740 min. | 9550 min. |
| 8602000 | 2 | 220 V / MF | G 1.1/4" | 515 | 2370 min. | 3150 min. | 4740 min. | 7875 min. |
| 8602600 | 2.6 | 220 V / MF | G 1.1/4" | 675 | 1830 min. | 2450 min. | 3660 min. | 6125 min. |
| 8602601 | 2.6 | 220 V / MF | G 1.1/4" | 360 | 1830 min. | 2450 min. | 3660 min. | 6125 min. |
| 8603300 | 3.3 | 220 V / MF | G 1.1/4" | 825 | 1450 min. | 1940 min. | 2900 min. | 4850 min. |
| 8603301 | 3.3 | 220 V / MF | G 1.1/4" | 435 | 1450 min. | 1940 min. | 2900 min. | 4850 min. |
| 8604001 | 4 | 220 V / MF | G 1.1/4" | 510 | 1200 min. | 1600 min. | 2400 min. | 4000 min. |
| 8705000 | 5 | 380 V / TF | G 1.1/2" | 445 | 950 min. | 1300 min. | 1900 min. | 3250 min. |
| 8706000 | 6 | 380 V / TF | G 1.1/2" | 510 | 800 min. | 1060 min. | 1600 min. | 2650 min. |
| 8708000 | 8 | 380 V / TF | G 1.1/2" | 670 | 610 min. | 800 min. | 1220 min. | 2000 min. |
| 8710000 | 10 | 380 V / TF | G 1.1/2" | 820 | 490 min. | 640 min. | 980 min. | 1600 min. |
| 8712000 | 12 | 380 V / TF | G 1.1/2" | 970 | 410 min. | 540 min. | 820 min. | 1350 min. |

n.a. =Heating element not applicable

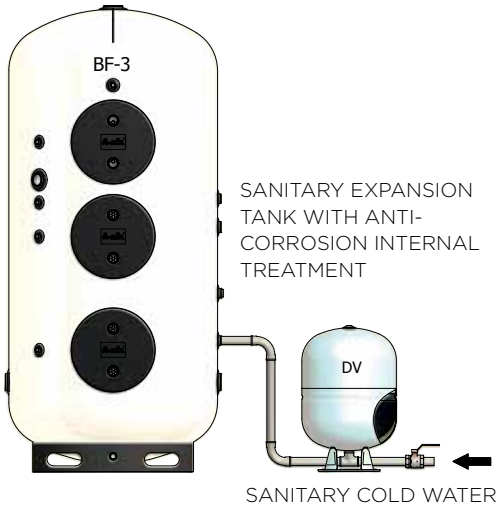
**SEE TABLE OF SYMBOLS IN THE SHUTTER OF THE COVER**



# BF3

## GLASSLINED CYLINDERS

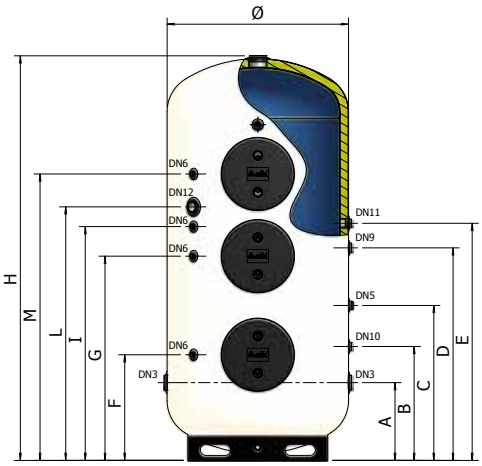
WITH THREE REMOVABLE STAINLESS STEEL HEAT EXCHANGERS (1.500 – 5.000 LITRES)

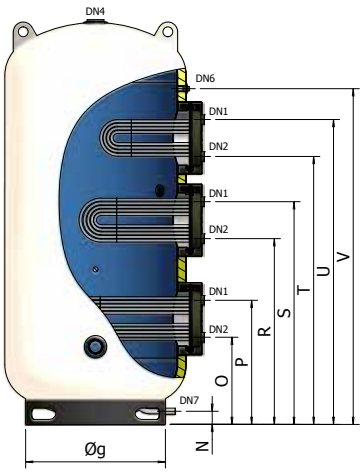



SANITARY EXPANSION TANK WITH ANTI-CORROSION INTERNAL TREATMENT

SANITARY COLD WATER

## BF3 1500 - 2000 - 3000 - 5000




### KEYWORD

**DN1:** Primary fluid inlet (heating side); **DN2:** Primary fluid outlet (heating side); **DN5:** Primary fluid inlet (heating side); **DN4:** Primary fluid outlet (heating side); **DN5:** Sanitary cold water inlet; **DN6:** Sanitary hot water outlet; **DN7:** Magnesium anode; **DN8:** Probes (Thermometer, Thermostat); **DN9:** Tank drain; **DN11:** Recirculation.

- CYLINDER
- FOR SANITARY HOT WATER
- SUITABLE FOR SOLAR SYSTEMS
- MAGNESIUM ANODE
- INTERNAL, GLASSLINING ANTI-CORROSION TREATMENT
- POLYURETHANE INSULATION
- HEAT EXCHANGER IN STAINLESS STEEL AISI 304
- HANDLING BY FORKLIFT

+ 95°C
WORKING TEMPERATURE

+110°C
HEAT EXCHANGER MAX TEMPERATURE

$P_{MAX}$ 6 bar
MAX WORKING PRESSURE

$P_{SCA}$ 12 bar
HEAT EXCHANGER MAX PRESSURE

**WARRANTY: 5 YEARS**

### INSULATION:

Expanded, flexible polyurethane with open cells.

### HEAT EXCHANGER:

Removable U pipe stainless steel heat exchanger.

### REFERENCE STANDARDS

**CYLINDER:**

Directive PED 97/23/EC – ART. 3.3, without CE marking
Standard EN 12897:2006

**INTERNAL GLASSLINING:**

DIN 4753
The glasslining treatment makes the cylinder suitable to contain hot water for sanitary and hygienic use and resistant to corrosive phenomena.

### INSTALLATION:

· traditional boilers (wall-hung and/or floor-standing)
· condensing boilers
· solar thermal systems

| MODEL | CODE | | EXCHANGER | | | | | | | | NOTES |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | LOWER | | CENTRAL | | UPPER | | | | |
| | | LITRES | m² | LITRES | m² | LITRES | m² | LITRES | mm | mm | |
| BF-3 / 1500 | A380H67 VW050 | 1500 | 4,00 | 18 | 3,00 | 15 | 1,60 | 7,5 | 1100 | 2465 | |
| BF-3 / 2000 | A380H70 VW050 | 2000 | 4,00 | 18 | 4,00 | 18 | 2,50 | 12,5 | 1200 | 2445 | |
| BF-3 / 3000 | A380H74 VW050 | 3000 | 6,00 | 24 | 6,00 | 24 | 3,00 | 15 | 1350 | 2840 | |
| BF-3 / 5000 | A380H80 VW050 | 5000 | 10,00 | 39 | 10,00 | 39 | 5,00 | 21 | 1700 | 3045 | |

| MODEL | ANODE ø x ø conn. x L | DN 1 | DN 2 | DN 3 | DN 4 | DN 5 | DN 6 | DN 7 | DN 8 | DN 9 | DN 10 | DN 11 | DN 12 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| BF-3 / 1500 | 32 x 1.1/4“ x 670 | 1.1/2” | 1.1/2” | 2.1/2“ | 3“ | 1.1/4” | 1/2“ | 1” | - | 1.1/2” | 1.1/4” | 1.1/4” | 2” |
| BF-3 / 2000 | 32 x 1.1/4“ x 670 | 1.1/2” | 1.1/2” | 2.1/2“ | 3“ | 1.1/4” | 1/2“ | 1” | - | 1.1/2” | 1.1/4” | 1.1/4” | 2” |
| BF-3 / 3000 | 32 x 1.1/4“ x 700 | 1.1/2” | 1.1/2” | 3“ | 3“ | 1.1/2“ | 1/2“ | 1” | - | 1.1/2” | 1.1/4” | 1.1/4” | 2” |
| BF-3 / 5000 | 40 x 1.1/2“ x 640 | 1.1/2” | 1.1/2” | 3“ | 3“ | 1.1/2“ | 1/2“ | 1” | - | 1.1/2” | 1.1/4” | 1.1/4” | 2” |

| MODEL | A mm | B mm | C mm | D mm | E mm | F mm | G mm | I mm | L mm | M mm | N mm | O mm | P mm | Q mm | R mm | S mm | T mm | U mm | V mm |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| BF-3 / 1500 | 475 | 695 | 945 | 1295 | 1445 | 645 | 1245 | 1425 | 1545 | 1745 | 80 | 530 | 755 | - | 1130 | 1355 | 1630 | 1855 | 2045 |
| BF-3 / 2000 | 465 | 685 | 935 | 1285 | 1435 | 635 | 1235 | 1415 | 1535 | 1735 | 80 | 520 | 745 | - | 1120 | 1345 | 1620 | 1845 | 2035 |
| BF-3 / 3000 | 530 | 730 | 980 | 1480 | 1630 | 680 | 1280 | 1520 | 1730 | 1930 | 80 | 565 | 790 | - | 1165 | 1390 | 1815 | 2040 | 2380 |
| BF-3 / 5000 | 635 | 835 | 1085 | 1585 | 1735 | 785 | 1385 | 1625 | 1835 | 2035 | 80 | 670 | 895 | - | 1270 | 1495 | 1920 | 2145 | 2485 |

## TECHNICAL CHARACTERISTICS

| HEAT EXCHANGER | CODE | MAXIMUM WORKING PRESSURE / MAXIMUM WORKING TEMPERATURE | | | PRESSURE DROP OF HEAT EXCHANGERS |
|---|---|---|---|---|---|
| | | HOT WATER 12 BAR / 110 °C | SATURATED STEAM 4 BAR / 152 °C | SATURATED STEAM 2 BAR / 134 °C | |
| 1,6 m² | 2950150 | ● | n.a. | ● | 80 mbar |
| 2,5 m² | 2960250 | ● | n.a. | ● | 110 mbar |
| 3,0 m² | 2950300 V0010 | ● | ● | n.a. | 200 mbar |
| 4,0 m² | 2950400 V0010 | ● | ● | n.a. | 220 mbar |
| 5,0 m² | 2960500 V0010 | ● | ● | n.a. | 270 mbar |
| 6,0 m² | 2960600 V0010 | ● | ● | n.a. | 350 mbar |
| 10,0 m² | 2961000 V0010 | ● | ● | n.a. | 400 mbar |

N.B. If using the heat exchanger with temperatures over 100 °C, ask for steam seals

| MODEL | INSULATION TYPE | INSULATION THICKNESS | INSULATION DENSITY | INITIAL THERMAL CONDUCTIVITY | (*) INSULATION THERMAL LOSS | EXTERNAL FINISH |
|---|---|---|---|---|---|---|
| BF-3 / 1500 | Flexible, expanded polyurethane with open cells | 50 mm | 15 kg/m³ | 39 mW/m K | 6,53 kWh / 24h | Skay white RAL 9001 |
| BF-3 / 2000 | | | | | 7,15 kWh / 24h | |
| BF-3 / 3000 | | | | | 9,18 kWh / 24h | |
| BF-3 / 5000 | | | | | 12,27 kWh / 24h | |

(*) Thermal loss calculated with an accumulation temperature equal to 60 °C and with an external temperature equal to 15 °C.

## SAFETY DEVICES

The cylinders must be protected against the effects of over pressure by installing:
· A **SAFETY VALVE** calibrated to pressure below the max pressure of the cylinder
· A **SANITARY EXPANSION TANK** mod. ELBI **D – DV series**

| MODEL | RECOMMENDED SANITARY EXPANSION TANK (mod. ELBI D-DV series) |
|---|---|
| BF-3 / 1500 | DV – 150 |
| BF-3 / 2000 | DV – 150 |
| BF-3 / 3000 | DV – 300 |
| BF-3 / 5000 | n°2 pcs DV – 200 |

Sized using the following parameters: T. accumulation= 85 °C / T. inlet = 15 °C / Pre-charge pressure = 3 bar / Max pressure = 6 bar
*The recommended capacity must be verified on the basis of the actual dimensions of the system implemented*

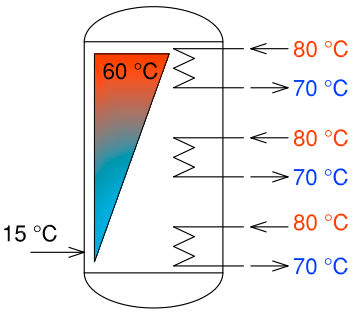
| MODEL | MAGNESIUM ANODE SUPPLIED | CATHODIC PROTECTION APPLICABLE |
|---|---|---|
| BF-3 / 1500 | 1.1/4" x 670 / Cod.8560070 | Cathodic protection for cylinders 1500/2000 l Code 8560180 |
| BF-3 / 2000 | 1.1/4" x 670 / Cod.8560070 | |
| BF-3 / 3000 | 1.1/4" x 700 / Cod.8560080 | Cathodic protection for cylinders 3000/5000 l. Code 8560185 |
| BF-3 / 5000 | 1.1/2" x 640 / Cod.8560100 | |

## THERMAL YIELD

### ACCUMULATION AT 60 °C

**HEAT EXCHANGER:** T.inlet = 80°C; ΔT = 10°C.
**STORAGE WATER HEATER:** T.inlet =15°C; T. accumulation = 60°C

**OPERATION WITH HOT WATER**



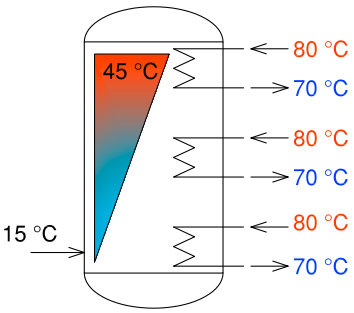

| MODEL | HEAT EXCHANGER [m²] | THERMAL POWER [kW] | PUMP CAPACITY [l/hour] | HEATING TIME(1) [min] | PRODUCTION DHW AT 60°C [l/hour] | QUANTITY DHW AT 45°C in first 10 min. (2) [l] |
|---|---|---|---|---|---|---|
| BF-3 / 1500 | 1,6 | 40,60 | 3580 | 42 | 775 | 1084 |
| | 3,0 | 72,00 | 6400 | | | |
| | 4,0 | 98,00 | 8500 | 30 | 3203 | 1825 |
| BF-3 / 2000 | 2,5 | 54,00 | 4760 | 38 | 1030 | 1362 |
| | 4,0 | 98,00 | 8500 | | | |
| | 4,0 | 98,00 | 8500 | 32 | 3656 | 2220 |
| BF-3 / 3000 | 3,0 | 72,00 | 6400 | 46 | 1375 | 1895 |
| | 6,0 | 159,30 | 14100 | | | |
| | 6,0 | 159,30 | 14100 | 29 | 6088 | 3592 |
| BF-3 / 5000 | 5,0 | 115,00 | 10150 | 47 | 2197 | 3228 |
| | 10,0 | 250,70 | 22000 | | | |
| | 10,0 | 250,70 | 22000 | 31 | 9580 | 5705 |

(1) Time required to bring the temperature of the cylinder from 15 °C to 60 °C.
(2) Quantity of DHW (Sanitary Hot Water) at 45°C available in the first 10 minutes with DHW accumulation at 60° C.

### ACCUMULATION AT 45 °C

**HEAT EXCHANGER:** T.inlet = 80°C; ΔT = 10°C.
**STORAGE WATER HEATER:** T.inlet =15°C; T. accumulation = 45°C

**OPERATION WITH HOT WATER**




| MODEL | HEAT EXCHANGER [m²] | THERMAL POWER [kW] | PUMP CAPACITY [l/hour] | HEATING TIME(1) [min] | PRODUCTION DHW AT 60°C [l/hour] |
|---|---|---|---|---|---|
| BF-3 / 1500 | 1,6 | 59,20 | 5230 | 20 | 1690 |
| | 3,0 | 92,00 | 8100 | | |
| | 4,0 | 131,60 | 11600 | 16 | 6135 |
| BF-3 / 2000 | 2,5 | 78,00 | 6900 | 18 | 2230 |
| | 4,0 | 131,60 | 11600 | | |
| | 4,0 | 131,60 | 11600 | 16 | 7540 |
| BF-3 / 3000 | 3,0 | 91,90 | 8140 | 24 | 2635 |
| | 6,0 | 223,60 | 19710 | | |
| | 6,0 | 223,60 | 19710 | 14 | 12820 |
| BF-3 / 5000 | 5,0 | 160,00 | 14000 | 23 | 4580 |
| | 10,0 | 339,00 | 29900 | | |
| | 10,0 | 3393,00 | 29900 | 16 | 19440 |

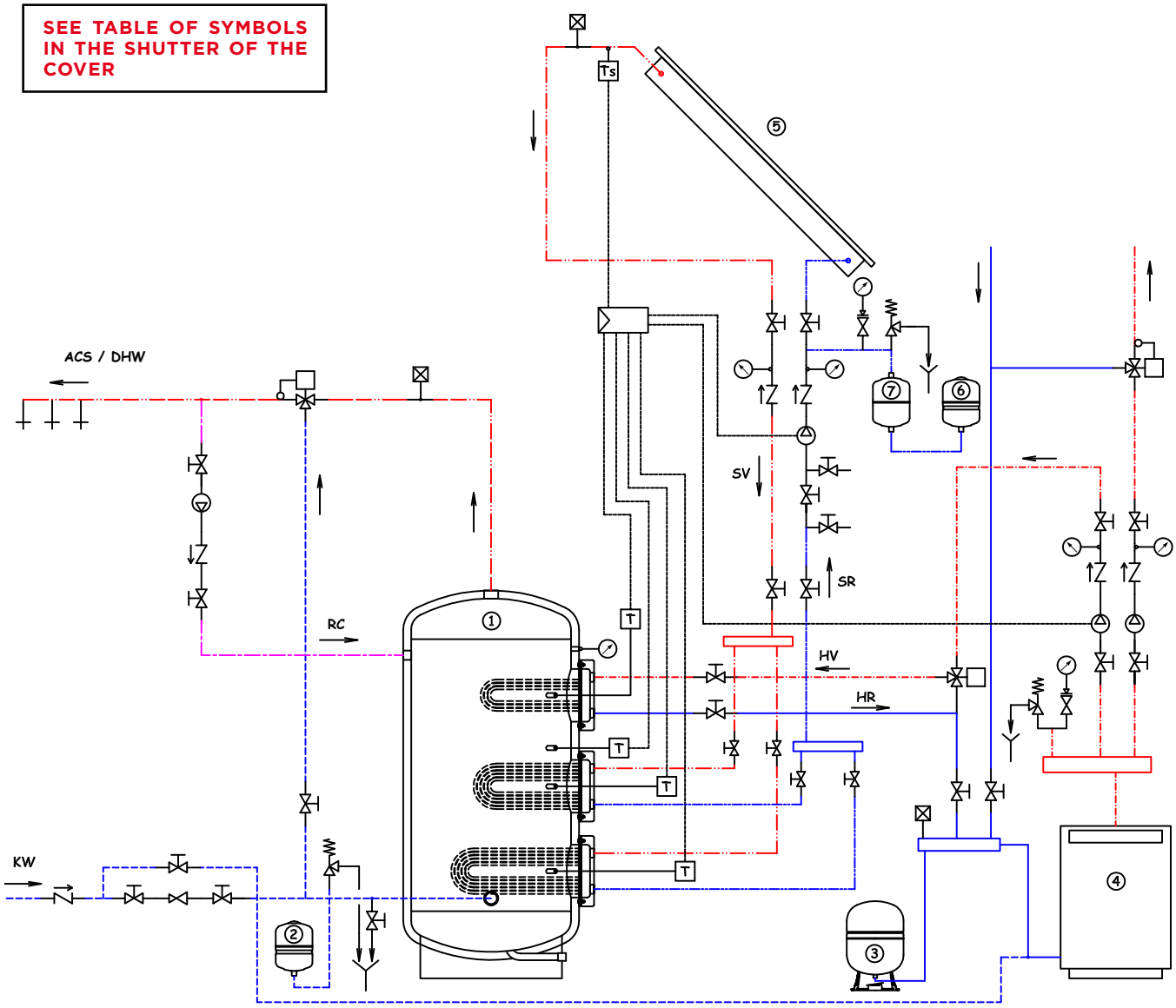
(1) Time required to bring the temperature of the cylinder from 15 °C to 45 °C.

## TABLE OF HEATING ELEMENT APPLICABILITY TO CYLINDERS

| Heating element model* | | | | | Water heating time from 15° C to 60 °C (expressed in minutes) *The heating times outlined are approximate* | | | |
|---|---|---|---|---|---|---|---|---|
| CODE | Power (kW) | Voltage (Volt) | Connection | Length (mm) | BF-3 1500 | BF-3 2000 | BF-3 3000 | BF-3 5000 |
| 8601000 | 1 | 220 V / MF | G 1.1/4" | 295 | 4720 min. | 6300 min. | 9420 min. | 15750 min. |
| 8601650 | 1.65 | 220 V / MF | G 1.1/4" | 450 | 2870 min. | 3820 min. | 5740 min. | 9550 min. |
| 8602000 | 2 | 220 V / MF | G 1.1/4" | 515 | 2370 min. | 3150 min. | 4740 min. | 7875 min. |
| 8602600 | 2.6 | 220 V / MF | G 1.1/4" | 675 | 1830 min. | 2450 min. | 3660 min. | 6125 min. |
| 8602601 | 2.6 | 220 V / MF | G 1.1/4" | 360 | 1830 min. | 2450 min. | 3660 min. | 6125 min. |
| 8603300 | 3.3 | 220 V / MF | G 1.1/4" | 825 | 1450 min. | 1940 min. | 2900 min. | 4850 min. |
| 8603301 | 3.3 | 220 V / MF | G 1.1/4" | 435 | 1450 min. | 1940 min. | 2900 min. | 4850 min. |
| 8604001 | 4 | 220 V / MF | G 1.1/4" | 510 | 1200 min. | 1600 min. | 2400 min. | 4000 min. |
| 8705000 | 5 | 380 V / TF | G 1.1/2" | 445 | 950 min. | 1300 min. | 1900 min. | 3250 min. |
| 8706000 | 6 | 380 V / TF | G 1.1/2" | 510 | 800 min. | 1060 min. | 1600 min. | 2650 min. |
| 8708000 | 8 | 380 V / TF | G 1.1/2" | 670 | 610 min. | 800 min. | 1220 min. | 2000 min. |
| 8710000 | 10 | 380 V / TF | G 1.1/2" | 820 | 490 min. | 640 min. | 980 min. | 1600 min. |
| 8712000 | 12 | 380 V / TF | G 1.1/2" | 970 | 410 min. | 540 min. | 820 min. | 1350 min. |

n.a. =Heating element not applicable

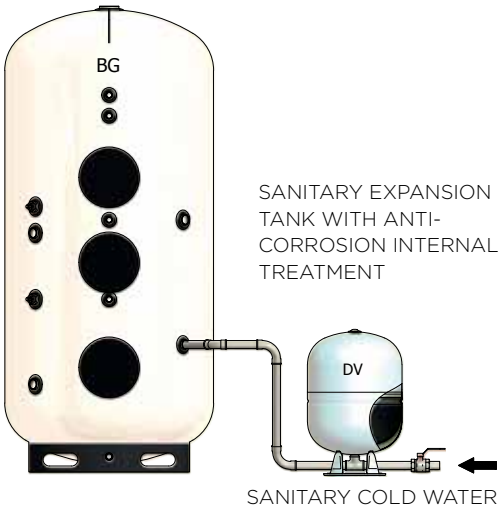
**SEE TABLE OF SYMBOLS IN THE SHUTTER OF THE COVER**



# BG

## MULTI-PURPOSE GLASSLINED BUFFER TANKS

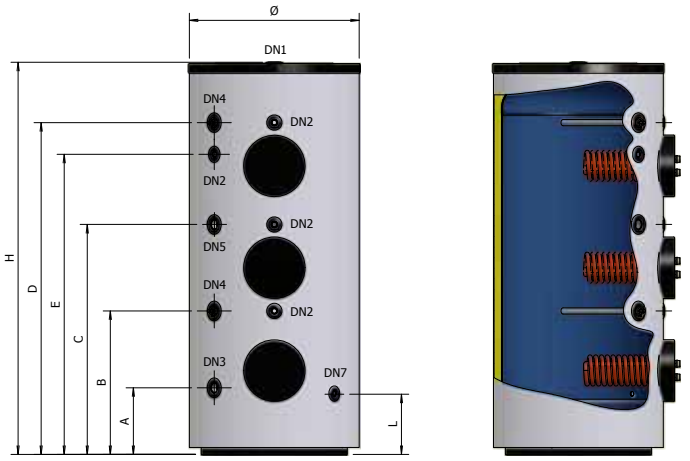
WITH TRIPLE FLANGED OPENINGS (800 – 5.000 LITRES)



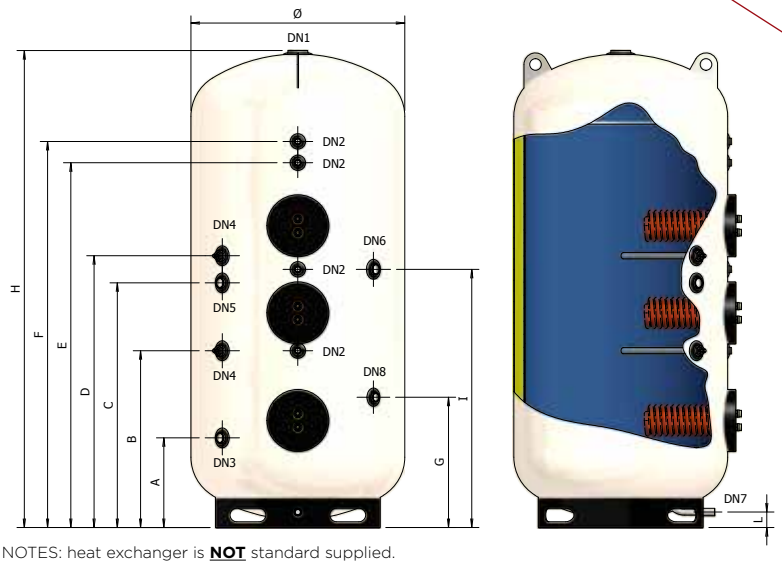

SANITARY EXPANSION TANK WITH ANTI-CORROSION INTERNAL TREATMENT

SANITARY COLD WATER

### BG 800 - 1000




### BG 1500 - 2000 - 3000 - 5000




NOTES: heat exchanger is **NOT** standard supplied.

**KEYWORD**

**DN1:** Sanitary hot water outlet; **DN2:** Probes (Thermometer, Thermostat); **DN3:** Sanitary cold water inlet; **DN4:** Magnesium anode; **DN5:** Heating element; **DN6:** Recirculation; **DN7:** Tank drain; **DN8:** Sanitary expansion tank connection.

- CYLINDER
- FOR SANITARY HOT WATER
- SUITABLE FOR SOLAR SYSTEMS
- MAGNESIUM ANODE WITH SIMPLETEST
- INTERNAL, GLASSLINING ANTI-CORROSION TREATMENT
- POLYURETHANE INSULATION

- + 95°C WORKING TEMPERATURE
- + 110°C HEAT EXCHANGER MAX TEMPERATURE
- $P_{MAX}$ 10 bar MAX WORKING PRESSURE
- $P_{SCA}$ 12 bar HEAT EXCHANGER MAX PRESSURE

**WARRANTY: 5 YEARS**

**INSULATION:**

Expanded polyurethane without CFC and HCFC

**HEAT EXHANGER:**

**Removable coil in finned copper (optional).**

**See accessories on page 241**

**REFERENCE STANDARDS**

**CYLINDER:**

Directive PED 97/23/EC – ART. 3.3, without CE marking
Standard EN 12897:2006

**INTERNAL GLASSLINING:**

DIN 4753

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

**INSTALLATION:**

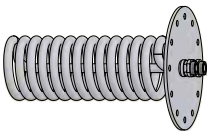
· traditional boilers (wall-hung and/or floor-standing)
· condensing boilers
· solar thermal systems

| MODEL | CODE | LITRES | mm | mm | NOTES |
|---|---|---|---|---|---|
| BG-800 | A3F0L60 P9016 | 800 | 900 | 1795 | |
| BG-1000 | A3F0L62 P9016 | 1000 | 900 | 2045 | |
| BG-1500 | A3F0H67 VW050 | 1500 | 1100 | 2460 | |
| BG-2000 | A3F0H70 VW050 | 2000 | 1200 | 2445 | |
| BG-3000 | A3F0H74 VW050 | 3000 | 1350 | 2840 | |
| BG-5000 | A3F0H80 VW050 | 5000 | 1700 | 3040 | |

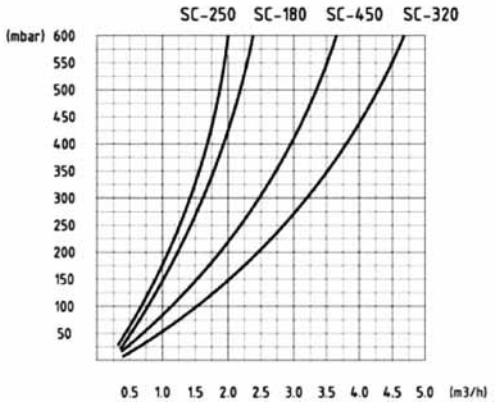
| | ANODE | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| MODEL | ø x ø conn. x L | DN1 | DN2 | DN3 | DN4 | DN5 | DN6 | DN7 | DN8 |
| BG-800 | n°2 32 x 1.1/2" x 550 | 1.1/2" | 3/4" | 1.1/2" | 1.1/2" | 1.1/2" | / | 3/4" | / |
| BG-1000 | n°2 32 x 1.1/2" x 550 | 1.1/2" | 3/4" | 1.1/2" | 1.1/2" | 1.1/2" | / | 3/4" | / |
| BG-1500 | n°2 32 x 1.1/2" x 550 | 3" | 3/4" | 1.1/2" | 1.1/2" | 1.1/2" | 1.1/2" | 1" | 1.1/4" |
| BG-2000 | n°2 32 x 1.1/2" x 550 | 3" | 3/4" | 1.1/2" | 1.1/2" | 1.1/2" | 1.1/2" | 1" | 1.1/4" |
| BG-3000 | n°2 32 x 1.1/2" x 550 | 3" | 3/4" | 1.1/2" | 1.1/2" | 1.1/2" | 1.1/2" | 1" | 1.1/4" |
| BG-5000 | n°2 32 x 1.1/2" x 550 | 3" | 3/4" | 1.1/2" | 1.1/2" | 1.1/2" | 1.1/2" | 1" | 1.1/4" |

| MODEL | A mm | B mm | C mm | D mm | E mm | F mm | G mm | I mm | L mm |
|---|---|---|---|---|---|---|---|---|---|
| BG-800 | 345 | 645 | 995 | 1465 | 1185 | / | / | / | 320 |
| BG-1000 | 350 | 750 | 1200 | 1730 | 1565 | / | / | / | 320 |
| BG-1500 | 465 | 915 | 1265 | 1405 | 1885 | 1995 | 675 | 1335 | 80 |
| BG-2000 | 455 | 905 | 1255 | 1395 | 1875 | 1985 | 665 | 1325 | 80 |
| BG-3000 | 500 | 950 | 1300 | 1440 | 1940 | 2230 | 710 | 1730 | 80 |
| BG-5000 | 605 | 1065 | 1405 | 1545 | 2045 | 2335 | 815 | 1835 | 80 |

| MODEL | CODE | SURF. m² | CONNECTIONS | DIMENSIONS øEXT x L |
|---|---|---|---|---|
| SC-180 | 2140180 | 1,8 | 3/4" | 170X460 |
| SC-250 | 2140250 | 2,5 | 3/4" | 170X560 |
| SC-320 | 2140320 | 3,2 | 1.1/4" | 190X550 |
| SC-450 | 2140450 | 4,5 | 1.1/4" | 190X750 |



## TECHNICAL CHARACTERISTICS

| MODEL | MAX WORKING PRESSURE CYLINDER (Secondary circuit) | MAX. WORKING PRESSURE HEAT EXCHANGER (Primary circuit) | PRESSURE DROP BASED ON CAPACITY INSIDE EXCHANGER |
|---|---|---|---|
| BG 800 | 10 bar | 95 °C |  |
| BG 1000 | | | |
| BG 1500 | | | |
| BG 2000 | | | |
| BG 3000 | | | |
| BG 5000 | | | |



| MODEL | INSULATION TYPE | INSULATION THICKNESS | INSULATION DENSITY | INITIAL THERMAL CONDUCTIVITY | (*) INSULATION THERMAL LOSS | EXTERNAL FINISH |
|---|---|---|---|---|---|---|
| BG 300 | 95% closed cells rigid expanded polyurethane, CFC - HCFC free | 50 mm | 40 kg/m³ | 23,5 mW/m K | 2,37 kWh / 24h | Grey polystyrene RAL 9006 |
| BG 1000 | | | | | 2,71 kWh / 24h | |
| BG 1500 | Open cells flexible expanded polyurethane | 50 mm | 15 kg/m³ | 39,0 mW/m K | 6,53 kWh / 24h | Skay white RAL 9001 |
| BG 2000 | | | | | 7,15 kWh / 24h | |
| BG 3000 | | | | | 9,18 kWh / 24h | |
| BG 5000 | | | | | 12,27kWh / 24h | |

(*) Thermal loss calculated with an accumulation temperature equal to 60 °C and with an external temperature equal to 15 °C.

## STANDARD EQUIPMENT

- Anode with simpletest

## SAFETY DEVICES

The cylinders must be protected against the effects of over pressure by installing:
· A **SAFETY VALVE** calibrated to pressure below the max pressure of the cylinder
· A **SANITARY EXPANSION TANK** mod. ELBI **D – DV series**

| MODEL | RECOMMENDED SANITARY EXPANSION TANK (mod. ELBI D-DV series) |
|---|---|
| BG 800 | DV – 50 |
| BG 1000 | DV – 80 |
| BG 1500 | DV – 150 |
| BG 2000 | DV – 150 |
| BG 3000 | DV – 300 |
| BG 5000 | n°2 pcs DV – 200 |

Sized using the following parameters: T. accumulation= 85 °C / T. inlet = 15 °C / Pre-charge pressure = 3 bar / Max pressure = 6 bar
*The recommended capacity must be verified on the basis of the actual dimensions of the system implemented.*

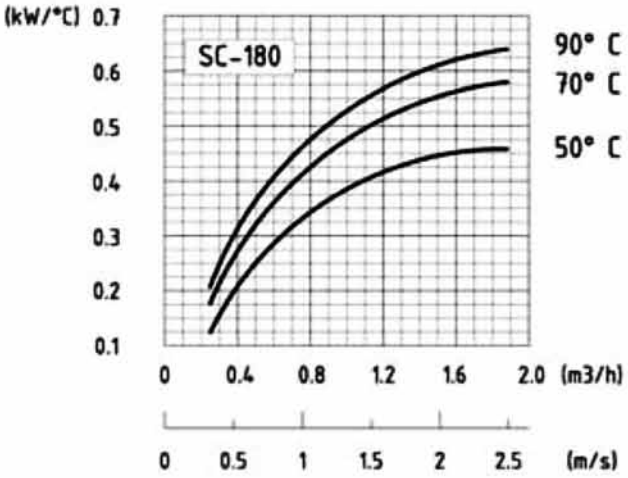
| MODEL | MAGNESIUM ANODE SUPPLIED | CATHODIC PROTECTION APPLICABLE |
|---|---|---|
| BG 800 | n.2 x 1.1/2" x 550 / Cod. 8560065 | Cathodic protection for cylinders 500/1000 l. Code 8560175 |
| BG 1000 | | |
| BG 1500 | | Cathodic protection for cylinders 1500/2000 l. Code 8560180 |
| BG 2000 | | |
| BG 3000 | | Cathodic protection for cylinders 3000/5000 l. Code 8560185 |
| BG 5000 | | |

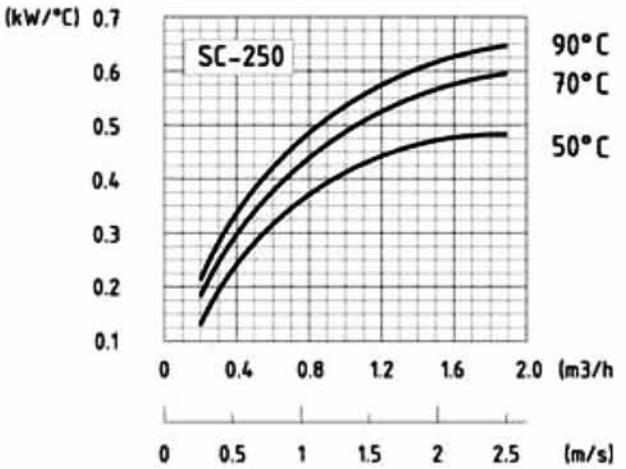
## CHARACTERISTIC CURVES ON SPIROIDAL HEAT EXHANGERS

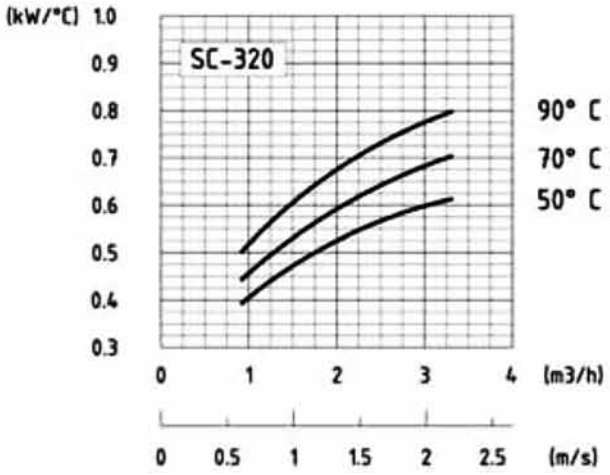
**Choice of heat exchanger:**
The graphics show the heat flow transmitted from the heat exchanger referring to a thermal gradient of 1°C between the temperature of the inlet water in the exchanger and the temperature of the cylinder inlet water.
The parameter to use is supplied based on:
· the temperature of the water into the heat exchanger;
· the capacity of the circulator.

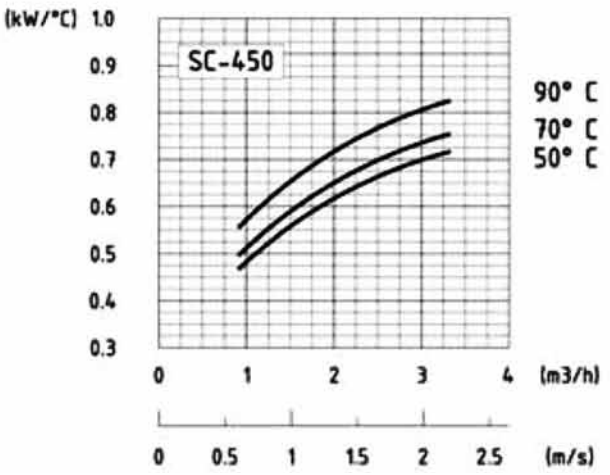
**Example:**
Heat exchanger model: SC-180
Cylinder inlet water temperature: 15 °C
Heat exchanger inlet water temperature: 70 °C
Circulator capacity: 1.20 $m^3/h$

The capacity of 1.20 $m^3/h$ crosses the curve (heat exchanger water inlet) relating to 70°C corresponding to the value 0.52 kW/°C.
For a temperature difference of 55°C (70°C - 15°C) we obtain heat exchanger power of:
**q = 55 x 0,52 = 28,60 kW**



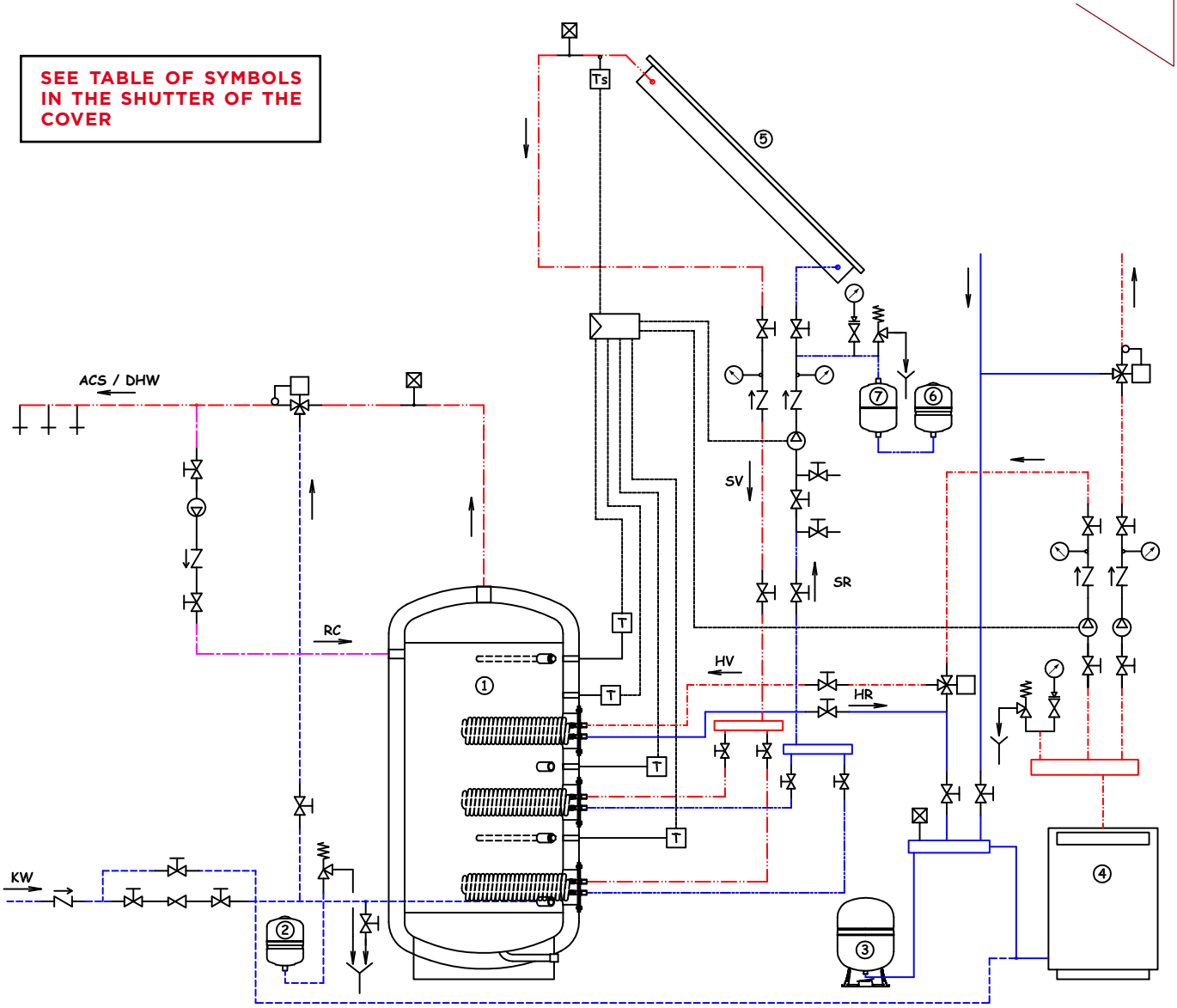




## TABLE OF HEATING ELEMENT APPLICABILITY TO CYLINDERS

| Heating element model* | | | | | Water heating time from 15° C to 60 °C (expressed in minutes) *The heating times outlined are approximate* | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| CODE | Power (kW) | Voltage (Volt) | Connection | Length (mm) | BG 800 | BG 1000 | BG 1500 | BG 2000 | BG 3000 | BG 5000 |
| 8601000 | 1 | 220 V / MF | G 1.1/4" | 295 | 2520 min. | 3150 min. | 4720 min. | 6300 min. | 9420 min. | 15750 min. |
| 8601650 | 1.65 | 220 V / MF | G 1.1/4" | 450 | 1550 min. | 1920 min. | 2870 min. | 3820 min. | 5740 min. | 9550 min. |
| 8602000 | 2 | 220 V / MF | G 1.1/4" | 515 | 1270 min. | 1580 min. | 2370 min. | 3150 min. | 4740 min. | 7875 min. |
| 8602600 | 2.6 | 220 V / MF | G 1.1/4" | 675 | 980 min. | 1230 min. | 1830 min. | 2450 min. | 3660 min. | 6125 min. |
| 8602601 | 2.6 | 220 V / MF | G 1.1/4" | 360 | 980 min. | 1230 min. | 1830 min. | 2450 min. | 3660 min. | 6125 min. |
| 8603300 | 3.3 | 220 V / MF | G 1.1/4" | 825 | n.a. | n.a. | 1450 min. | 1940 min. | 2900 min. | 4850 min. |
| 8603301 | 3.3 | 220 V / MF | G 1.1/4" | 435 | 780 min. | 980 min. | 1450 min. | 1940 min. | 2900 min. | 4850 min. |
| 8604001 | 4 | 220 V / MF | G 1.1/4" | 510 | 640 min. | 800 min. | 1200 min. | 1600 min. | 2400 min. | 4000 min. |
| 8705000 | 5 | 380 V / TF | G 1.1/2" | 445 | 520 min. | 640 min | 950 min. | 1300 min. | 1900 min. | 3250 min. |
| 8706000 | 6 | 380 V / TF | G 1.1/2" | 510 | 430 min. | 540 min | 800 min. | 1060 min. | 1600 min. | 2650 min. |
| 8708000 | 8 | 380 V / TF | G 1.1/2" | 670 | 330 min. | 420 min. | 610 min. | 800 min. | 1220 min. | 2000 min. |
| 8710000 | 10 | 380 V / TF | G 1.1/2" | 820 | n.a. | n.a. | 490 min. | 640 min. | 980 min. | 1600 min. |
| 8712000 | 12 | 380 V / TF | G 1.1/2" | 970 | n.a. | n.a. | 410 min. | 540 min. | 820 min. | 1350 min. |

n.a. =Heating element not applicable

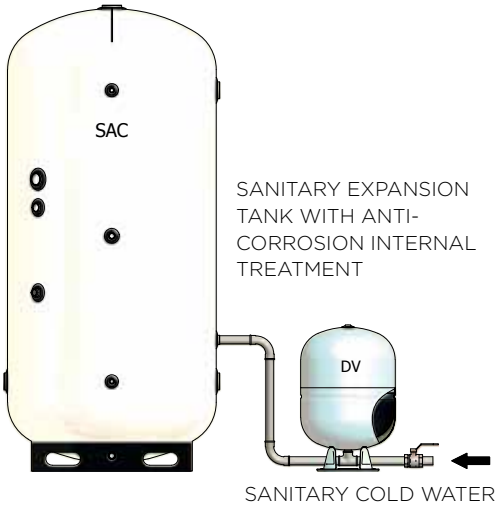
**SEE TABLE OF SYMBOLS IN THE SHUTTER OF THE COVER**



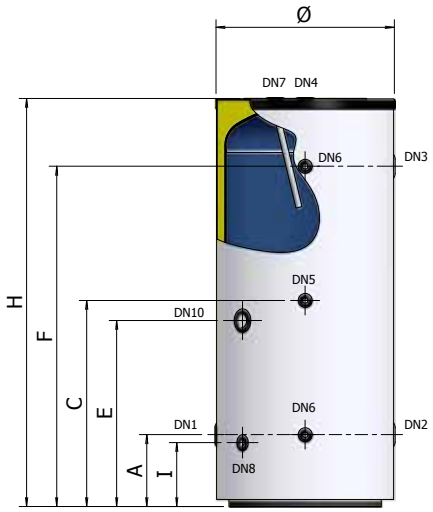
# SAC

## GLASSLINED ACCUMULATORS

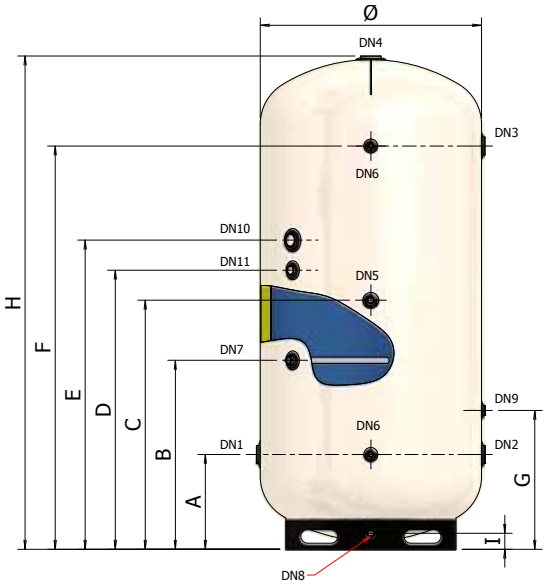
FOR SANITARY HOT WATER (300 – 5.000 LITRES)




## SAC 300 - 500 - 800 - 1000




## SAC 1500 - 2000 - 3000 - 5000




**KEYWORD**

**DN1**: Sanitary cold water inlet; **DN2:** Sanitary water outlet (external heat exchanger); **DN3:** Sanitary hot water inlet (from external heat exchanger); **DN4:** Sanitary hot water outlet; **DN5:** Recirculation; **DN6:** Probes; **DN7:** Magnesium anode; **DN8:** Drain; **DN9:** Sanitary expansion tank connection; **DN10:** Heating element; **DN11:** Predisposition for auxiliary magnesium anode.

- FOR SANITARY HOT WATER
- MAGNESIUM ANODE
- HANDLING BY FORKLIFT
- INTERNAL, GLASSLINING ANTI-CORROSION TREATMENT
- POLYURETHANE INSULATION

+ 95°C
WORKING TEMPERATURE

$P_{MAX}$ 10 bar (300 - 1000)
MAX WORKING PRESSURE

$P_{MAX}$ 6 bar (1500 - 5000)
MAX WORKING PRESSURE

**WARRANTY: 5 YEARS**

### INSULATION:

EXPANDED POLYURETHANE

### REFERENCE STANDARDS

**ACCUMULATOR:**

Directive PED 97/23/EC – ART. 3.3, without CE marking
Standard EN 12897:2006

**INTERNAL GLASSLINING:**

DIN 4753
The glasslining treatment makes the accumulator suitable to contain hot water for sanitary and hygienic use and resistant to corrosive phenomena.

### INSTALLATION:

· traditional boilers (wall-hung and/or floor-standing)
· condensing boilers
· solar thermal systems

## DIMENSIONS

| MODEL | CODE | LITRES | mm | mm | NOTES |
|---|---|---|---|---|---|
| SAC-300 | A3I0L51 PGP40 | 300 | 650 | 1400 | |
| SAC-500 | A3I0L55 PGP40 | 500 | 750 | 1695 | |
| SAC-800 | A3I0L60 PGP40 | 800 | 900 | 1780 | |
| SAC-1000 | A3I0L62 PGP40 | 1000 | 900 | 2030 | |
| SAC-1500 | A3I0H67 VW050 | 1500 | 1100 | 2460 | |
| SAC-2000 | A3I0H70 VW050 | 2000 | 1200 | 2445 | |
| SAC-3000 | A3I0H74 VW050 | 3000 | 1350 | 2840 | |
| SAC-5000 | A3I0H80 VW050 | 5000 | 1700 | 3040 | |

| MODEL | A mm | B mm | C mm | D mm | E mm | F mm | G mm | I mm |
|---|---|---|---|---|---|---|---|---|
| SAC-300 | 280 | / | 710 | / | 640 | 1140 | / | 245 |
| SAC-500 | 300 | / | 855 | / | 770 | 1410 | / | 265 |
| SAC-800 | 350 | / | 905 | / | 860 | 1460 | / | 320 |
| SAC-1000 | 360 | / | 1030 | / | 930 | 1700 | / | 320 |
| SAC-1500 | 475 | 945 | 1245 | 1395 | 1545 | 2015 | 695 | 80 |
| SAC-2000 | 465 | 935 | 1235 | 1385 | 1535 | 2005 | 685 | 80 |
| SAC-3000 | 525 | 980 | 1425 | 1580 | 1730 | 2330 | 730 | 80 |
| SAC-5000 | 635 | 1085 | 1535 | 1685 | 1835 | 2435 | 835 | 80 |

| MODEL | ANODE ø x ø conn. x L | DN1 | DN2 | DN3 | DN4 | DN5 | DN6 | DN7 | DN8 | DN9 | DN10 | DN11 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SAC-300 | 32 x 1.1/4“ x 350 | 1.1/4” | 1.1/4” | 1.1/4” | 1.1/4” | 3/4” | 1/2” | 1.1/4” | 1/2” | / | 2” | / |
| SAC-500 | 32 x 1.1/4“ x 410 | 1.1/2” | 1.1/2” | 1.1/2” | 1.1/4” | 3/4” | 1/2” | 1.1/4” | 1/2” | / | 2” | / |
| SAC-800 | 32 x 1.1/4“ x 520 | 1.1/2” | 1.1/2” | 1.1/2” | 1.1/4” | 3/4” | 1/2” | 1.1/4” | 3/4” | / | 2” | / |
| SAC-1000 | 32 x 1.1/4“ x 520 | 2” | 2” | 2” | 1.1/4” | 3/4” | 1/2” | 1.1/4” | 3/4” | / | 2” | / |
| SAC-1500 | 32 x 1.1/4“ x 670 | 2.1/2” | 2.1/2” | 2.1/2” | 3” | 3/4” | 1/2” | 1.1/4” | 1” | 1.1/4” | 2” | 1.1/4” |
| SAC-2000 | 32 x 1.1/4“ x 670 | 2.1/2” | 2.1/2” | 2.1/2” | 3” | 3/4” | 1/2” | 1.1/4” | 1” | 1.1/4” | 2” | 1.1/4” |
| SAC-3000 | 32 x 1.1/4“ x 700 | 3” | 3” | 3” | 3” | 3/4” | 1/2” | 1.1/4” | 1” | 1.1/4” | 2” | 1.1/4” |
| SAC-5000 | 40 x 1.1/2“ x 640 | 3” | 3” | 3” | 3” | 3/4” | 1/2” | 1.1/2” | 1” | 1.1/4” | 2” | 1.1/2” |

## TECHNICAL CHARACTERISTICS

| MODEL | MAX WORKING PRESSURE CYLINDER (Secondary circuit) | MAXIMUM WORKING TEMPERATURE |
|---|---|---|
| SAC-300 | 10 bar | 95 °C |
| SAC-500 | | |
| SAC-800 | | |
| SAC-1000 | | |
| SAC-1500 | 6 bar | |
| SAC-2000 | | |
| SAC-3000 | | |
| SAC-5000 | | |

| MODEL | INSULATION TYPE | INSULATION THICKNESS | INSULATION DENSITY | INITIAL THERMAL CONDUCTIVITY | (*) INSULATION THERMAL LOSS | EXTERNAL COVER |
|---|---|---|---|---|---|---|
| SAC 300 | 95% closed cells rigid expanded polyurethane, CFC - HCFC free | 50 mm | 40 kg/m³ | 23,5 mW/m K | 1,29 kWh / 24h | Grey polystyrene RAL 9006 |
| SAC 500 | | | | | 1,84 kWh / 24h | |
| SAC 800 | | | | | 2,37 kWh / 24h | |
| SAC 1000 | | | | | 2,71 kWh / 24h | |
| SAC 1500 | Open cells flexible expanded polyurethane | 50 mm | 15 kg/m³ | 39,0 mW/m K | 6,53 kWh / 24h | Skay white RAL 9001 |
| SAC 2000 | | | | | 7,15 kWh / 24h | |
| SAC 3000 | | | | | 9,18 kWh / 24h | |
| SAC 5000 | | | | | 12,27kWh / 24h | |

## SAFETY DEVICES

The cylinders must be protected against the effects of over pressure by installing:
· A **SAFETY VALVE** calibrated to pressure below the max pressure of the accumulator
· A **SANITARY EXPANSION TANK** mod. ELBI **D – DV series**

| MODEL | RECOMMENDED SANITARY EXPANSION TANK (mod. ELBI D-DV series) |
|---|---|
| SAC 300 | D – 24 |
| SAC 500 | D – 35 |
| SAC 800 | DV – 50 |
| SAC 1000 | DV – 80 |
| SAC 1500 | DV – 150 |
| SAC 2000 | DV – 150 |
| SAC 3000 | DV – 300 |
| SAC 5000 | n°2 pcs DV - 200 |

Sized using the following parameters: T. accumulation= 85 °C / T. inlet = 15 °C / Pre-charge pressure = 3 bar / Max pressure = 6 bar
*The recommended capacity must be verified on the basis of the actual dimensions of the system implemented.*

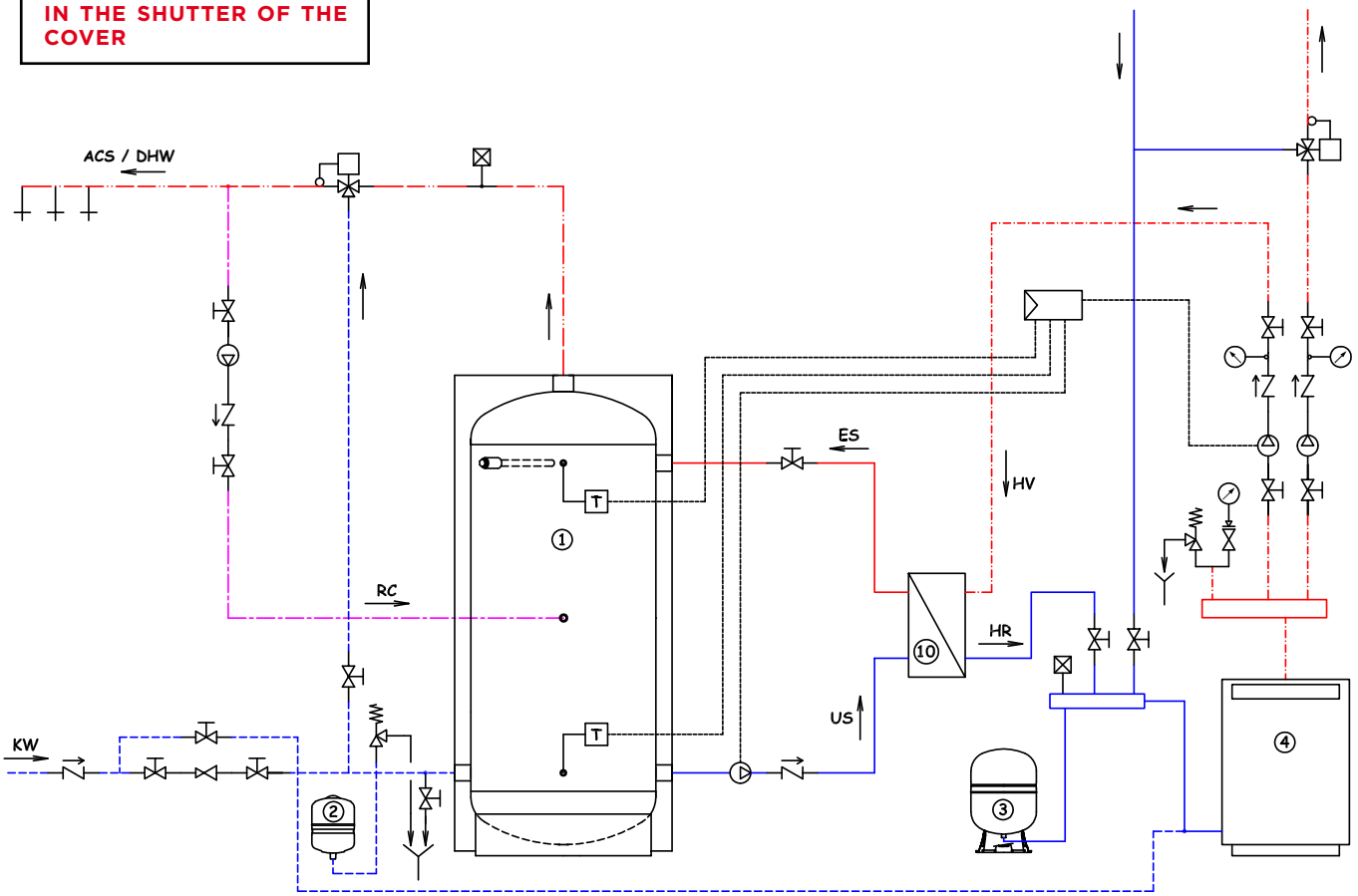
| MODEL | MAGNESIUM ANODE SUPPLIED | CATHODIC PROTECTION APPLICABLE |
|---|---|---|
| SAC 300 | 1.1/4" x 320 / Cod. 8560040 | Cathodic protection for cylinders 100/400 l. Code 8560170 |
| SAC 500 | 1.1/4" x 410 / Cod. 8560050 | Cathodic protection for cylinders 500/1000 l. Code 8560175 |
| SAC 800 | 1.1/4" x 520 / Cod. 8560060 | |
| SAC 1000 | 1.1/4" x 520 / Cod. 8560060 | |
| SAC 1500 | 1.1/4" x 670 / Cod. 8560070 | Cathodic protection for cylinders 1500/2000 l. Code 8560180 |
| SAC 2000 | 1.1/4" x 670 / Cod. 8560070 | |
| SAC 3000 | 1.1/4" x 700 / Cod. 8560080 | Cathodic protection for cylinders 3000/5000 l. Code 8560185 |
| SAC 5000 | 1.1/2" x 640 / Cod. 8560100 | |

## TABLE OF HEATING ELEMENT APPLICABILITY TO CYLINDERS

| Heating element model* | | | | | Water heating time from 15° C to 60 °C (expressed in minutes) *The heating times outlined are approximate* | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| CODE | Power (kW) | Voltage (Volt) | Connection | Length (mm) | SAC 300 | DAC 500 | SAC 800 | SAC 1000 | SAC 1500 | SAC 2000 |
| 8601000 | 1 | 220 V / MF | G 1.1/4" | 295 | 960 min. | 1580 min. | 2520 min. | 3150 min. | 4720 min. | 6300 min. |
| 8601650 | 1.65 | 220 V / MF | G 1.1/4" | 450 | 580 min. | 970 min. | 1550 min. | 1920 min. | 2870 min. | 3820 min. |
| 8602000 | 2 | 220 V / MF | G 1.1/4" | 515 | n.a. | 800 min. | 1270 min. | 1580 min. | 2370 min. | 3150 min. |
| 8602600 | 2.6 | 220 V / MF | G 1.1/4" | 675 | n.a. | n.a. | 980 min. | 1230 min. | 1810 min. | 2450 min. |
| 8602601 | 2.6 | 220 V / MF | G 1.1/4" | 360 | 370 min. | 630 min. | 980 min. | 1230 min. | 1830 min. | 2450 min. |
| 8603300 | 3.3 | 220 V / MF | G 1.1/4" | 825 | n.a. | n.a. | n.a. | n.a. | 1450 min. | 1940 min. |
| 8603301 | 3.3 | 220 V / MF | G 1.1/4" | 435 | 295 min. | 490 min. | 780 min. | 980 min. | 1450 min. | 1940 min. |
| 8604001 | 4 | 220 V / MF | G 1.1/4" | 510 | n.a. | 410 min. | 640 min. | 800 min. | 1200 min. | 1600 min. |
| 8705000 | 5 | 380 V / TF | G 1.1/2" | 445 | 200 min | 330 min | 520 min. | 640 min. | 950 min. | 1300 min. |
| 8706000 | 6 | 380 V / TF | G 1.1/2" | 510 | n.a. | 280 min | 430 min. | 540 min. | 800 min. | 1060 min. |
| 8708000 | 8 | 380 V / TF | G 1.1/2" | 670 | n.a. | n.a. | 330 min. | 420 min. | 610 min. | 800 min. |
| 8710000 | 10 | 380 V / TF | G 1.1/2" | 820 | n.a. | n.a. | n.a. | n.a. | 490 min. | 640 min. |
| 8712000 | 12 | 380 V / TF | G 1.1/2" | 970 | n.a. | n.a. | n.a. | n.a. | 410 min. | 540 min. |

n.a. =Heating element not applicable

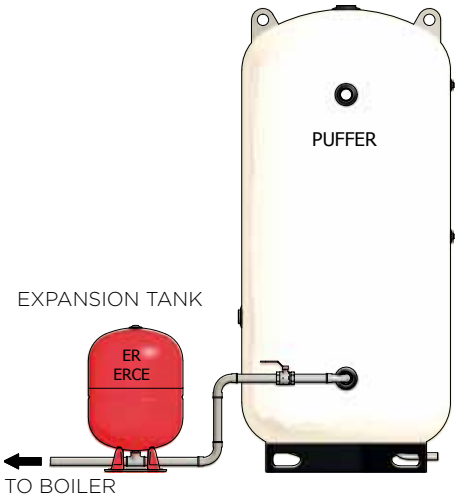
**SEE TABLE OF SYMBOLS IN THE SHUTTER OF THE COVER**



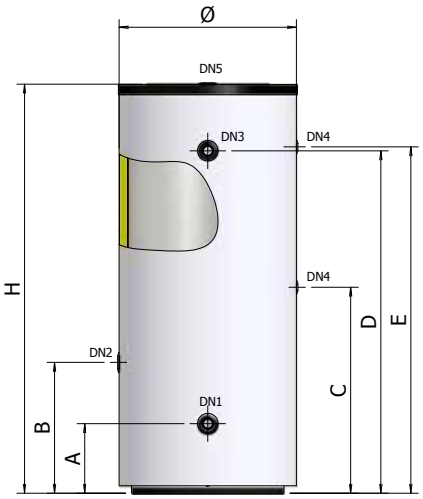
# PUFFER

## HEATED WATER BUFFER TANKS

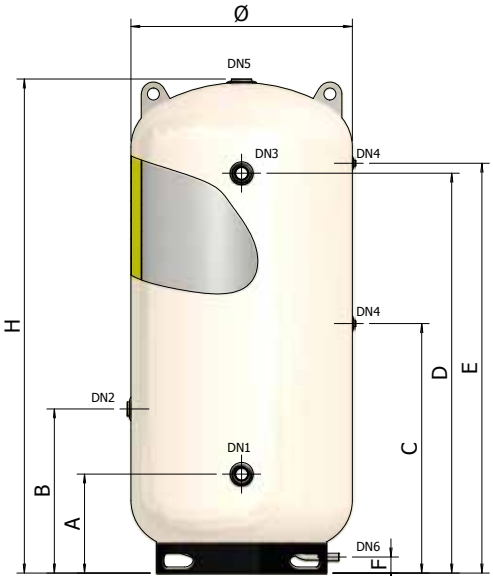
FOR HEATING APPLICATIONS (300 – 2.000 LITRES)




### PUFFER 300 - 500 - 800 - 1000




### PUFFER 1500 - 2000




**KEYWORD**

**DN1:** To boiler; **DN2:** From plant (heating system); **DN3:** From boiler; **DN4:** Probes; **DN5:** To plant (heating system); **DN6:** Drain.

- HOT WATER STORAGE TANK
- HANDLING BY FORKLIFT
- FOR HEATING SYSTEMS
- POLYURETHANE INSULATION

+ 95°C
WORKING TEMPERATURE

$P_{MAX}$ 10 bar (300 - 1000)
MAX WORKING PRESSURE

$P_{MAX}$ 6 bar (1500 -2000)
MAX WORKING PRESSURE

**WARRANTY: 2 YEARS**

**INSTALLATION:**

· traditional boilers (wall-hung and/or floor-standing)
· condensing boilers
· solar thermal systems

**INSULATION:**

EXPANDED POLYURETHANE

**REFERENCE STANDARDS**

**ACCUMULATOR:**

Directive PED 97/23/EC – ART. 3.3, without CE marking

## DIMENSIONS

| MODEL | CODE | LITRES | mm | mm | NOTES |
|---|---|---|---|---|---|
| PUFFER-300 | A3G0L51 PGP40 | 300 | 650 | 1395 | |
| PUFFER-500 | A3G0L55 PGP40 | 500 | 750 | 1695 | |
| PUFFER-800 | A3G0L60 PGP40 | 800 | 900 | 1795 | |
| PUFFER-1000 | A3G0L62 PGP40 | 1000 | 900 | 2045 | |
| PUFFER-1500 | A3G0H67 P9016 | 1500 | 1100 | 2460 | |
| PUFFER-2000 | A3G0H70 P9016 | 2000 | 1200 | 2445 | |

| MODEL | A mm | B mm | C mm | D mm | E mm | F mm |
|---|---|---|---|---|---|---|
| PUFFER-300 | 270 | 455 | 705 | 1140 | 1155 | / |
| PUFFER-500 | 295 | 545 | 855 | 1415 | 1430 | / |
| PUFFER-800 | 350 | 595 | 905 | 1460 | 1480 | / |
| PUFFER-1000 | 350 | 655 | 1030 | 1710 | 1730 | / |
| PUFFER-1500 | 495 | 820 | 1245 | 1995 | 2045 | 80 |
| PUFFER-2000 | 485 | 810 | 1235 | 1985 | 2035 | 80 |

| MODEL | DN1 | DN2 | DN3 | DN4 | DN5 | DN6 |
|---|---|---|---|---|---|---|
| PUFFER-300 | 1.1/4" | 1.1/4" | 1.1/4" | 1/2" | 1.1/4" | / |
| PUFFER-500 | 1.1/4" | 1.1/4" | 1.1/4" | 1/2" | 1.1/4" | / |
| PUFFER-800 | 1.1/2" | 1.1/2" | 1.1/2" | 1/2" | 1.1/2" | / |
| PUFFER-1000 | 1.1/2" | 1.1/2" | 1.1/2" | 1/2" | 1.1/2" | / |
| PUFFER-1500 | 2" | 2" | 2" | 1/2" | 3" | 1" |
| PUFFER-2000 | 2" | 2" | 2" | 1/2" | 3" | 1" |

## TECHNICAL CHARACTERISTICS

| MODEL | MAX WORKING PRESSURE | MAXIMUM WORKING TEMPERATURE |
|---|---|---|
| PUFFER 300 | 10 bar | 95 °C |
| PUFFER 500 | | |
| PUFFER 800 | | |
| PUFFER 1000 | | |
| PUFFER 1500 | 6 bar | |
| PUFFER 2000 | | |

| MODEL | INSULATION TYPE | INSULATION THICKNESS | INSULATION DENSITY | INITIAL THERMAL CONDUCTIVITY | (*) INSULATION THERMAL LOSS | EXTERNAL COVER |
|---|---|---|---|---|---|---|
| PUFFER 300 | 95% closed cells rigid expanded polyurethane, CFC - HCFC free | 50 mm | 40 kg/m³ | 23,5 mW/m K | 1,29 kWh / 24h | Grey polystyrene RAL 9006 |
| PUFFER 500 | | | | | 1,84 kWh / 24h | |
| PUFFER 800 | | | | | 2,37 kWh / 24h | |
| PUFFER 1000 | | | | | 2,71 kWh / 24h | |
| PUFFER 1500 | Open cells flexible expanded polyurethane | 50 mm | 15 kg/m³ | 39,0 mW/m K | 6,53 kWh / 24h | Skay white RAL 9001 |
| PUFFER 2000 | | | | | 7,15 kWh / 24h | |

(*) Thermal loss calculated with an accumulation temperature equal to 60 °C and with an external temperature equal to 15 °C.

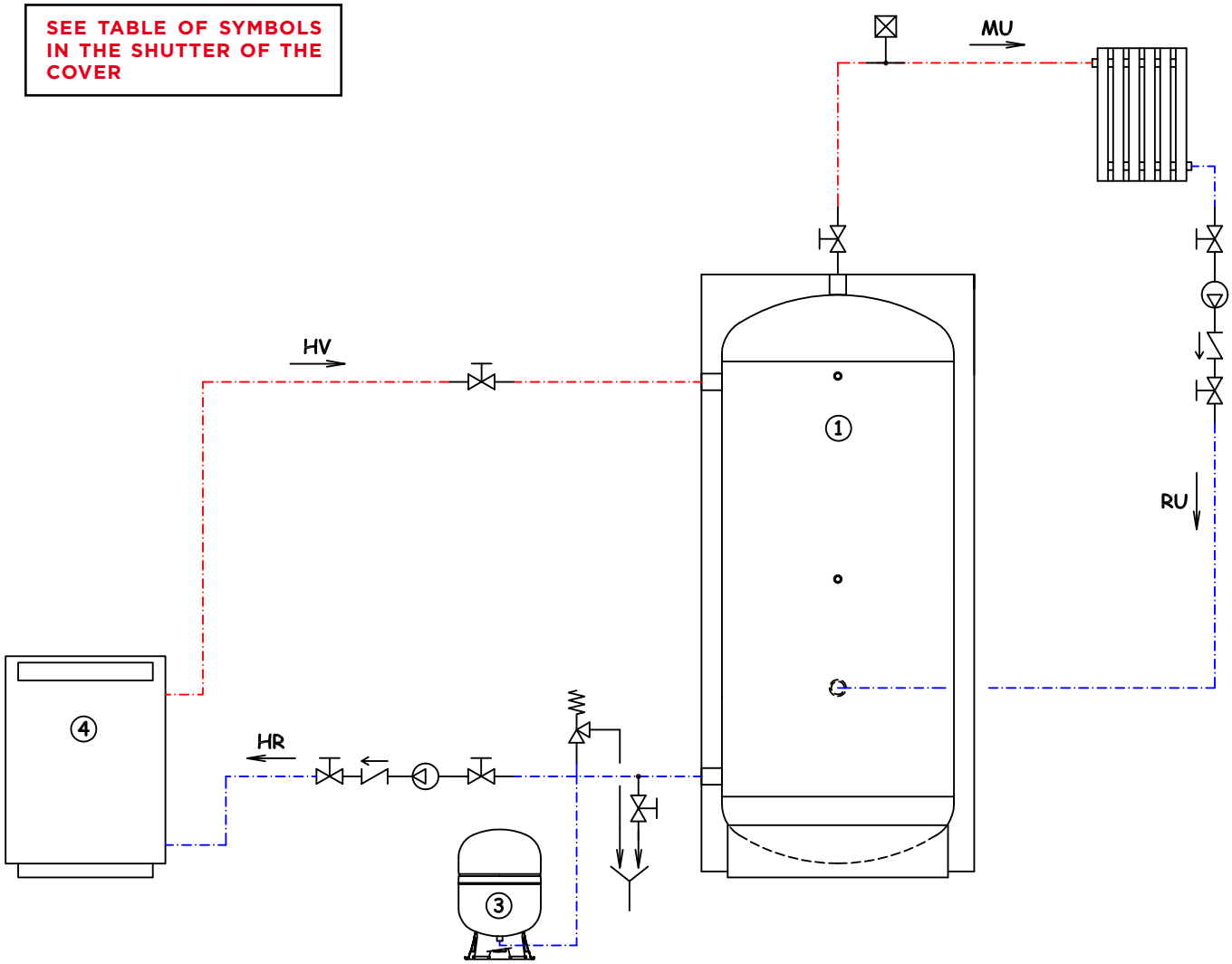
## TABLE OF HEATING ELEMENT APPLICABILITY TO CYLINDERS

| Heating element model* | | | | | Water heating time from 15° C to 60 °C (expressed in minutes) *The heating times outlined are approximate* | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| CODE | Power (kW) | Voltage (Volt) | Connection | Length (mm) | PUFFER 300 | PUFFER 500 | PUFFER 800 | PUFFER 1000 | PUFFER 1500 | PUFFER 2000 |
| 8601000 | 1 | 220 V / MF | G 1.1/4" | 295 | 960 min. | 1580 min. | 2520 min. | 3150 min. | 4720 min. | 6300 min. |
| 8601650 | 1.65 | 220 V / MF | G 1.1/4" | 450 | 580 min. | 970 min. | 1550 min. | 1920 min. | 2870 min. | 3820 min. |
| 8602000 | 2 | 220 V / MF | G 1.1/4" | 515 | n.a. | 800 min. | 1270 min. | 1580 min. | 2370 min. | 3150 min. |
| 8602600 | 2.6 | 220 V / MF | G 1.1/4" | 675 | n.a. | n.a. | 980 min. | 1230 min. | 1810 min. | 2450 min. |
| 8602601 | 2.6 | 220 V / MF | G 1.1/4" | 360 | 370 min. | 630 min. | 980 min. | 1230 min. | 1830 min. | 2450 min. |
| 8603300 | 3.3 | 220 V / MF | G 1.1/4" | 825 | n.a. | n.a. | n.a. | n.a. | 1450 min. | 1940 min. |
| 8603301 | 3.3 | 220 V / MF | G 1.1/4" | 435 | 295 min. | 490 min. | 780 min. | 980 min. | 1450 min. | 1940 min. |
| 8604001 | 4 | 220 V / MF | G 1.1/4" | 510 | n.a. | 410 min. | 640 min. | 800 min. | 1200 min. | 1600 min. |
| 8705000 | 5 | 380 V / TF | G 1.1/2" | 445 | 200 min | 330 min | 520 min. | 640 min. | 950 min. | 1300 min. |
| 8706000 | 6 | 380 V / TF | G 1.1/2" | 510 | n.a. | 280 min | 430 min. | 540 min. | 800 min. | 1060 min. |
| 8708000 | 8 | 380 V / TF | G 1.1/2" | 670 | n.a. | n.a. | 330 min. | 420 min. | 610 min. | 800 min. |
| 8710000 | 10 | 380 V / TF | G 1.1/2" | 820 | n.a. | n.a. | n.a. | n.a. | 490 min. | 640 min. |
| 8712000 | 12 | 380 V / TF | G 1.1/2" | 970 | n.a. | n.a. | n.a. | n.a. | 410 min. | 540 min. |

n.a. =Heating element not applicable

## HYDRAULIC DIAGRAM

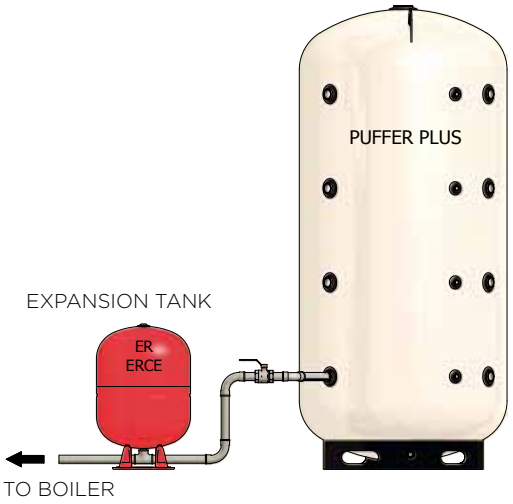
**SEE TABLE OF SYMBOLS IN THE SHUTTER OF THE COVER**



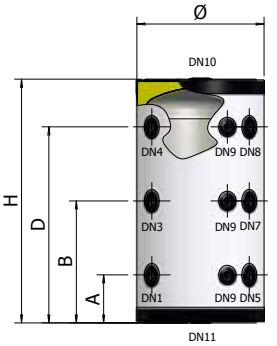
# PUFFER PLUS

## HEATED WATER BUFFER TANKS

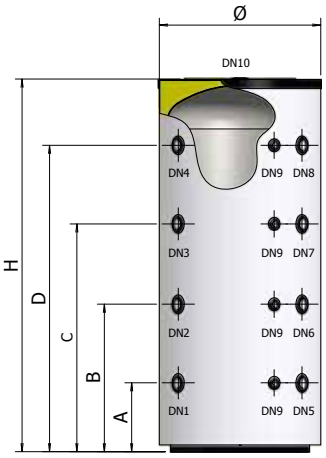
FOR HEATING APPLICATIONS WITH MULTIPLE CONNECTIONS (100 – 2.000 LITRES)



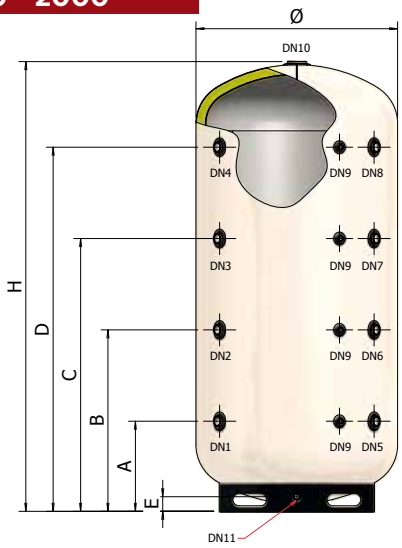

## PUFFER PLUS 1500 - 2000




**PUFFER PLUS 100**




**PUFFER PLUS 300 - 1000**




**PUFFER PLUS 1500 - 2000**

**KEYWORD**

**DN1:** To boiler; **DN2:** Auxiliary connection; **DN3:** To floor plant; **DN4:** From boiler; **DN5:** From floor plant; **DN6:** Auxiliary connection; **DN7:** From plant (heating system); **DN8:** To plant; **DN9:** Probes; **DN10:** Auxiliary connection; **DN11:** Drain.

HOT WATER STORAGE TANK

HANDLING BY FORKLIFT

FOR HEATING SYSTEMS

POLYURETHANE INSULATION

+ 95°C
WORKING TEMPERATURE

$P_{MAX}$ 10 bar (100 - 1000)
MAX WORKING PRESSURE

$P_{MAX}$ 6 bar (1500 -2000)
MAX WORKING PRESSURE

**WARRANTY: 2 YEARS**

**INSULATION:**
EXPANDED POLYURETHANE

**REFERENCE STANDARDS**

**ACCUMULATOR:**
Directive PED 97/23/CE – ART. 3.3, without CE marking

**INSTALLATION:**
· traditional boilers (wall-hung and/or floor-standing)
· condensing boilers
· solar thermal systems

## DIMENSIONS

| MODEL | CODE | LITRES | mm | mm | DN1 | DN2 | DN3 | DN4 | NOTES |
|---|---|---|---|---|---|---|---|---|---|
| PUFFER PLUS-100 | A3H0L38 PGP30 | 100 | 460 | 885 | 1" | 1/2" | 1.1/4" | 1.1/4" | |
| PUFFER PLUS-200 | A3H0L47 PGP40 | 200 | 600 | 1160 | 1.1/2" | 1/2" | 1.1/4" | / | |
| PUFFER PLUS-300 | A3H0L51 PGP40 | 300 | 650 | 1395 | 1.1/2" | 1/2" | 1.1/4" | / | |
| PUFFER PLUS-500 | A3H0L55 PGP40 | 500 | 750 | 1695 | 1.1/2" | 1/2" | 1.1/4" | / | |
| PUFFER PLUS-500 | A3H0L60 PGP40 | 800 | 900 | 1795 | 1.1/2" | 1/2" | 1.1/2" | / | |
| PUFFER PLUS-1000 | A3H0L62 PGP40 | 1000 | 900 | 2045 | 1.1/2" | 1/2" | 1.1/2" | / | |
| PUFFER PLUS-1500 | A3H0H67 P9016 | 1500 | 1100 | 2460 | 1.1/2" | 1/2" | 3" | 1" | |
| PUFFER PLUS-2000 | A3H0H70 P9016 | 2000 | 1200 | 2445 | 1.1/2" | 1/2" | 3" | 1" | |

| MODEL | A mm | B mm | C mm | D mm | E mm |
|---|---|---|---|---|---|
| PUFFER PLUS-100 | 170 | 440 | / | 710 | / |
| PUFFER PLUS-200 | 250 | 590 | / | 930 | / |
| PUFFER PLUS-300 | 265 | 555 | 855 | 1145 | / |
| PUFFER PLUS-500 | 290 | 665 | 1045 | 1420 | / |
| PUFFER PLUS-800 | 380 | 730 | 1080 | 1430 | / |
| PUFFER PLUS-1000 | 380 | 810 | 1250 | 1680 | / |
| PUFFER PLUS-1500 | 495 | 995 | 1495 | 1995 | 80 |
| PUFFER PLUS-2000 | 485 | 985 | 1485 | 1985 | 80 |

## TECHNICAL CHARACTERISTICS

| MODEL | MAX WORKING PRESSURE | MAXIMUM WORKING TEMPERATURE |
|---|---|---|
| PUFFER PLUS 100 | 10 bar | 95 °C |
| PUFFER PLUS 200 | | |
| PUFFER PLUS 300 | | |
| PUFFER PLUS 500 | | |
| PUFFER PLUS 800 | | |
| PUFFER PLUS 1000 | | |
| PUFFER PLUS 1500 | 6 bar | |
| PUFFER PLUS 2000 | | |

| MODEL | INSULATION TYPE | INSULATION THICKNESS | INSULATION DENSITY | INITIAL THERMAL CONDUCTIVITY | (*) INSULATION THERMAL LOSS | EXTERNAL FINISH |
|---|---|---|---|---|---|---|
| PUFFER PLUS 100 | 95% closed cells rigid expanded polyurethane, CFC - HCFC free | 30 mm | 40 kg/m³ | 23,5 mW/m K | 1,01 kWh / 24h | Grey polystyrene RAL 9006 |
| PUFFER PLUS 200 | | 50 mm | | | 1,32 kWh / 24h | |
| PUFFER PLUS 300 | | | | | 1,29 kWh / 24h | |
| PUFFER PLUS 500 | | | | | 1,84 kWh / 24h | |
| PUFFER PLUS 800 | | | | | 2,37 kWh / 24h | |
| PUFFER PLUS 1000 | | | | | 2,71 kWh / 24h | |
| PUFFER PLUS 1500 | Open cells flexible expanded polyurethane | 50 mm | 15 kg/m³ | 39,0 mW/m K | 6,53 kWh / 24h | Skay white RAL 9001 |
| PUFFER PLUS 2000 | | | | | 7,15 kWh / 24h | |

(*) Thermal loss calculated with an accumulation temperature equal to 60 °C and with an external temperature equal to 15 °C.

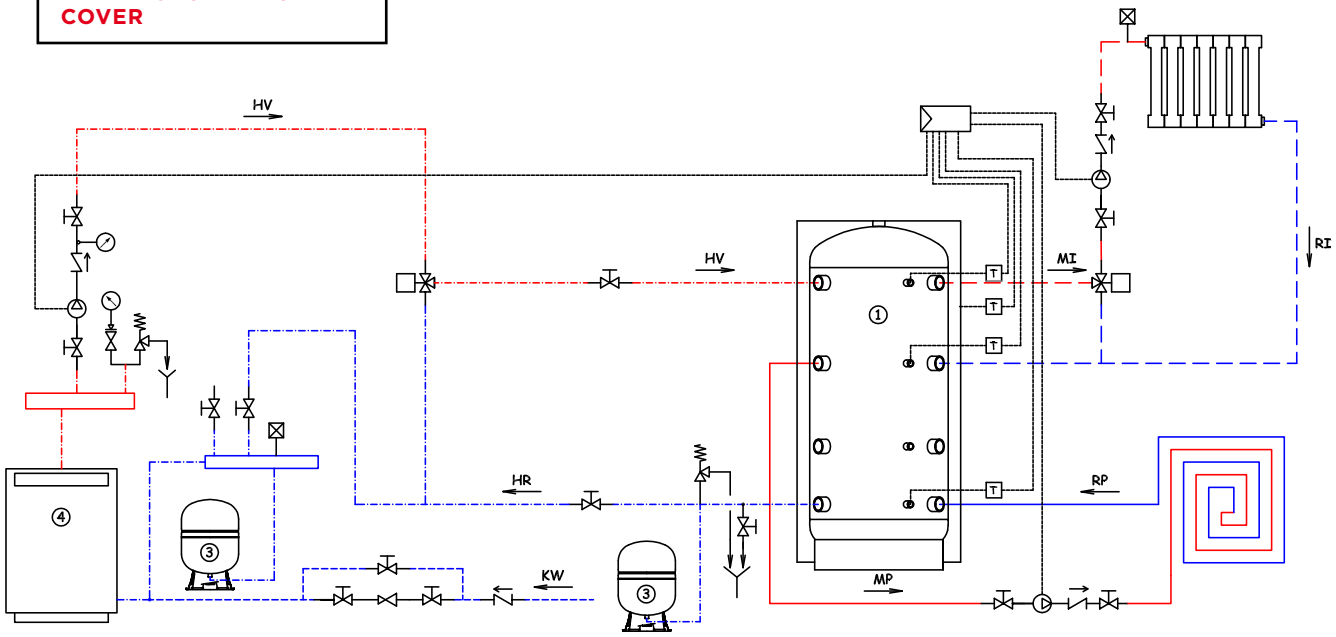
## TABLE OF HEATING ELEMENT APPLICABILITY TO CYLINDERS

| Heating element model* | | | | | Water heating time from 15° C to 60 °C (expressed in minutes) *The heating times outlined are approximate* | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| CODE | Power (kW) | Voltage (Volt) | Connection | Length (mm) | PUFFER PLUS 100 | PUFFER PLUS 200 | PUFFER PLUS 300 | PUFFER PLUS 500 | PUFFER PLUS 800 | PUFFER PLUS 1000 | PUFFER PLUS 1500 | PUFFER PLUS 2000 |
| 8601000 | 1 | 220 V / MF | G 1.1/4" | 295 | 320 min. | 630 min. | 960 min. | 1580 min. | 2520 min. | 3150 min. | 4720 min. | 6300 min. |
| 8601650 | 1.65 | 220 V / MF | G 1.1/4" | 450 | 200 min. | 380 min. | 580 min. | 970 min. | 1550 min. | 1920 min. | 2870 min. | 3820 min. |
| 8602000 | 2 | 220 V / MF | G 1.1/4" | 515 | 165 min. | 315 min. | n.a. | 800 min. | 1270 min. | 1580 min. | 2370 min. | 3150 min. |
| 8602600 | 2.6 | 220 V / MF | G 1.1/4" | 675 | n.a. | 242 min. | n.a. | n.a. | 980 min. | 1230 min. | 1830 min. | 2450 min. |
| 8602601 | 2.6 | 220 V / MF | G 1.1/4" | 360 | 130 min. | 242 min. | 370 min. | 630 min. | 980 min. | 1230 min. | 1830 min. | 2450 min. |
| 8603300 | 3.3 | 220 V / MF | G 1.1/4" | 825 | n.a. | 190 min. | n.a. | n.a. | n.a. | n.a. | 1450 min. | 1940 min. |
| 8603301 | 3.3 | 220 V / MF | G 1.1/4" | 435 | 100 min. | 190 min. | 295 min. | 490 min. | 780 min. | 980 min. | 1450 min. | 1940 min. |
| 8604001 | 4 | 220 V / MF | G 1.1/4" | 510 | 85 min. | 157 min. | n.a. | 410 min. | 640 min. | 800 min. | 1200 min. | 1600 min. |
| 8705000 | 5 | 380 V / TF | G 1.1/2" | 445 | n.a. | n.a. | 200 min. | 330 min. | 520 min. | 640 min. | 950 min. | 1300 min. |
| 8706000 | 6 | 380 V / TF | G 1.1/2" | 510 | n.a. | n.a. | n.a. | 280 min. | 430 min. | 540 min. | 800 min. | 1060 min. |
| 8708000 | 8 | 380 V / TF | G 1.1/2" | 670 | n.a. | n.a. | n.a. | n.a. | 330 min. | 420 min. | 610 min. | 800 min. |
| 8710000 | 10 | 380 V / TF | G 1.1/2" | 820 | n.a. | n.a. | n.a. | n.a. | n.a. | n.a. | 490 min. | 640 min. |
| 8712000 | 12 | 380 V / TF | G 1.1/2" | 970 | n.a. | n.a. | n.a. | n.a. | n.a. | n.a. | 410 min. | 540 min. |

n.a. =Heating element not applicable

## HYDRAULIC DIAGRAM

**SEE TABLE OF SYMBOLS IN THE SHUTTER OF THE COVER**

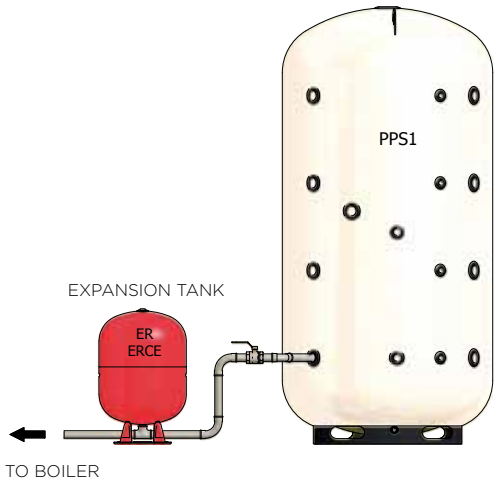


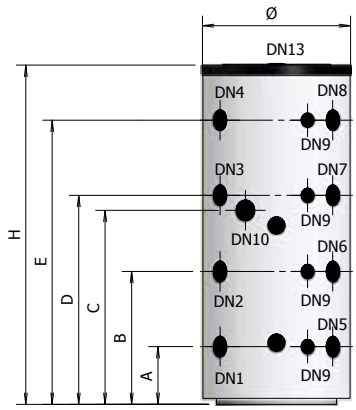
# PPS1

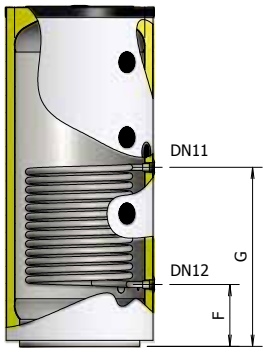
## BUFFER TANK FOR HEATING SYSTEMS

WITH FIXED SPIRAL COIL FOR HEATING APPLICATIONS (300 - 2.000 LITRES)

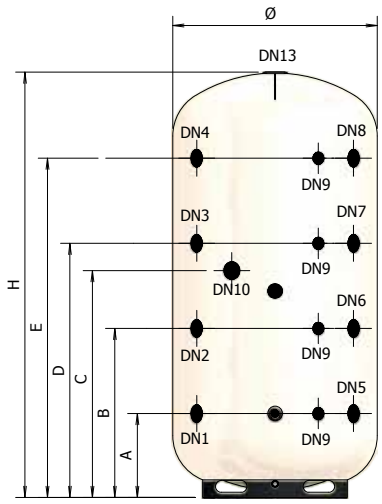
### PPS1 300 - 500

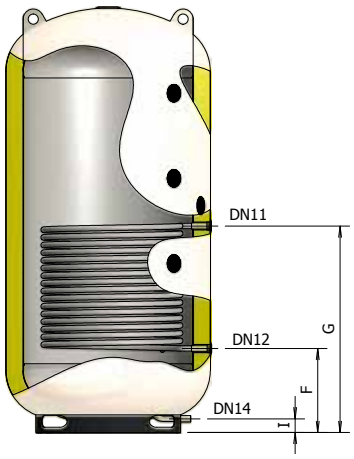



### PPS1 800 - 1000 - 1500 - 2000




**KEYWORD**

**DN1:** from heating system; **DN2:** auxiliary connection; **DN3:** auxiliary connection; **DN4:** to heating system; **DN5:** from floor heating system; **DN6:** to biomass boiler; **DN7:** to floor heating system; **DN8:** from biomass boiler; **DN9:** probes; **DN10:** electric heating element; **DN11:** (solar) heat exchanger inlet; **DN12:** (solar) heat exchanger outlet; **DN13:** auxiliary connection; **DN14:** drain.

- HOT WATER STORAGE TANK
- HANDLING BY FORKLIFT
- FOR HEATING SYSTEMS
- POLYURETHANE INSULATION
- HOT WATER CYLINDER
- SUITABLE FOR SOLAR SYSTEMS

+ 95°C
CYLINDER MAX WORKING TEMPERATURE

+110°C
HEAT EXCHANGER MAX TEMPERATURE

$P_{MAX}$ 10 bar (300 - 1000)
6 bar (1500 - 2000)
MAX WORKING PRESSURE

$P_{SCA}$ 12 bar
HEAT EXCHANGER MAX WORKING PRESSURE

**WARRANTY: 2 YEARS**

**INSULATION:**

EXPANDED POLYURETHANE

**REFERENCE STANDARDS**

**ACCUMULATOR:**

Directive PED 97/23/CE – ART. 3.3, without CE marking

**INSTALLATION:**

· traditional boilers (wall-hung and/or floor-standing)
· pellet boilers
· biomass boilers
· burning thermo-fireplaces
· solar heating systems

## DIMENSIONS

| MODEL | CODE | | HEAT EXCHANGER LOWER | | | | | | NOTES |
|---|---|---|---|---|---|---|---|---|---|
| | | LITRES | m² | LITRES | mm | mm | DN 1 | DN 2 | |
| PPS1-300 | A3Z1L51 PGP40 | 300 | 1,5 | 9 | 650 | 1400 | 1"1/2 | 1"1/2 | |
| PPS1-500 | A3Z1L55 PGP40 | 500 | 2,1 | 14 | 750 | 1695 | 1"1/2 | 1"1/2 | |
| PPS1-800 | A3Z1L60 PGP40 | 800 | 2,4 | 16 | 900 | 1835 | 1"1/2 | 1"1/2 | |
| PPS1-1000 | A3Z1L62 PGP40 | 1000 | 3,0 | 20 | 900 | 2285 | 1"1/2 | 1"1/2 | |
| PPS1-1500 | A3Z1H67 P9016 | 1500 | 4,1 | 26 | 1100 | 2495 | 1"1/2 | 1"1/2 | |
| PPS1-2000 | A3Z1H70 P9016 | 2000 | 4,6 | 30 | 1200 | 2475 | 1"1/2 | 1"1/2 | |

| MODEL | DN3 | DN4 | DN5 | DN6 | DN7 | DN8 | DN9 | DN10 | DN11 | DN12 |
|---|---|---|---|---|---|---|---|---|---|---|
| PPS1-300 | 1"1/2 | 1"1/2 | 1"1/2 | 1"1/2 | 1"1/2 | 1"1/2 | 1/2" | 1"1/2 | 1" | 1" |
| PPS1-500 | 1"1/2 | 1"1/2 | 1"1/2 | 1"1/2 | 1"1/2 | 1"1/2 | 1/2" | 1"1/2 | 1" | 1" |
| PPS1-800 | 1"1/2 | 1"1/2 | 1"1/2 | 1"1/2 | 1"1/2 | 1"1/2 | 1/2" | 1"1/2 | 1" | 1" |
| PPS1-1000 | 1"1/2 | 1"1/2 | 1"1/2 | 1"1/2 | 1"1/2 | 1"1/2 | 1/2" | 1"1/2 | 1" | 1" |
| PPS1-1500 | 1"1/2 | 1"1/2 | 1"1/2 | 1"1/2 | 1"1/2 | 1"1/2 | 1/2" | 1"1/2 | 1" | 1" |
| PPS1-2000 | 1"1/2 | 1"1/2 | 1"1/2 | 1"1/2 | 1"1/2 | 1"1/2 | 1/2" | 1"1/2 | 1" | 1" |

| MODEL | DN13 | DN14 | A mm | B mm | C mm | D mm | E mm | F mm | G mm | I mm |
|---|---|---|---|---|---|---|---|---|---|---|
| PPS1-300 | 1"1/4 | / | 270 | 560 | 845 | 860 | 1150 | 250 | 790 | / |
| PPS1-500 | 1"1/ | / | 290 | 665 | 970 | 1045 | 1420 | 310 | 895 | / |
| PPS1-800 | 1"1/2 | / | 365 | 715 | 980 | 1065 | 1415 | 345 | 930 | / |
| PPS1-1000 | 1"1/2 | / | 365 | 865 | 115 | 1365 | 1865 | 365 | 1085 | / |
| PPS1-1500 | 3" | 1" | 495 | 995 | 1335 | 1495 | 1995 | 495 | 1215 | 80 |
| PPS1-2000 | 3" | 1" | 485 | 985 | 1325 | 1485 | 1985 | 485 | 1205 | 80 |

## TECHNICAL CHARACTERISTICS

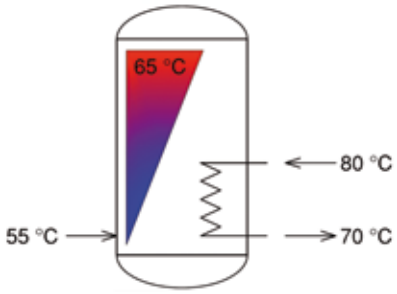
| MODEL | CYLINDER | | HEAT ECHANGER | |
|---|---|---|---|---|
| | MAX WORKING PRESSURE | MAX WORKING TEMPERATURE | MAX WORKING PRESSURE | MAX WORKING TEMPERATURE |
| PPS1-300 | 10 bar | 95 °C | 12 bar | 110 °C |
| PPS1-500 | | | | |
| PPS1-800 | | | | |
| PPS1-1000 | | | | |
| PPS1-1500 | 6 bar | | | |
| PPS1-2000 | | | | |

| MODEL | INSULATION TYPE | INSULATION THICKNESS | INSULATION DENSITY | INITIAL THERMAL CONDUCTIVITY | (*) INSULATION THERMAL LOSS | EXTERNAL COVER |
|---|---|---|---|---|---|---|
| PPS1-300 | 95% closed cells rigid expanded polyurethane, CFC - HCFC free | 50 mm | 40 Kg/m³ | 23,5 mW/m K | 1,29 kW / 24h | Grey polystyrene RAL 9006 |
| PPS1-500 | | | | | 1,84 kW / 24h | |
| PPS1-800 | | | | | 2,37 kW / 24h | |
| PPS1-1000 | | | | | 2,71 kW / 24h | |
| PPS1-1500 | Open cells flexible expanded polyurethane | | 15 Kg/m³ | 39 mW/m K | 6,53 kW / 24h | White Skay RAL 9001 |
| PPS1-2000 | | | | | 7,15 kW / 24h | |

(*) Thermal loss calculated with an accumulation temperature equal to 60 °C and with an external temperature equal to 15 °C.

## THERMAL YIELD WITH ACCUMULATION AT 65 °C

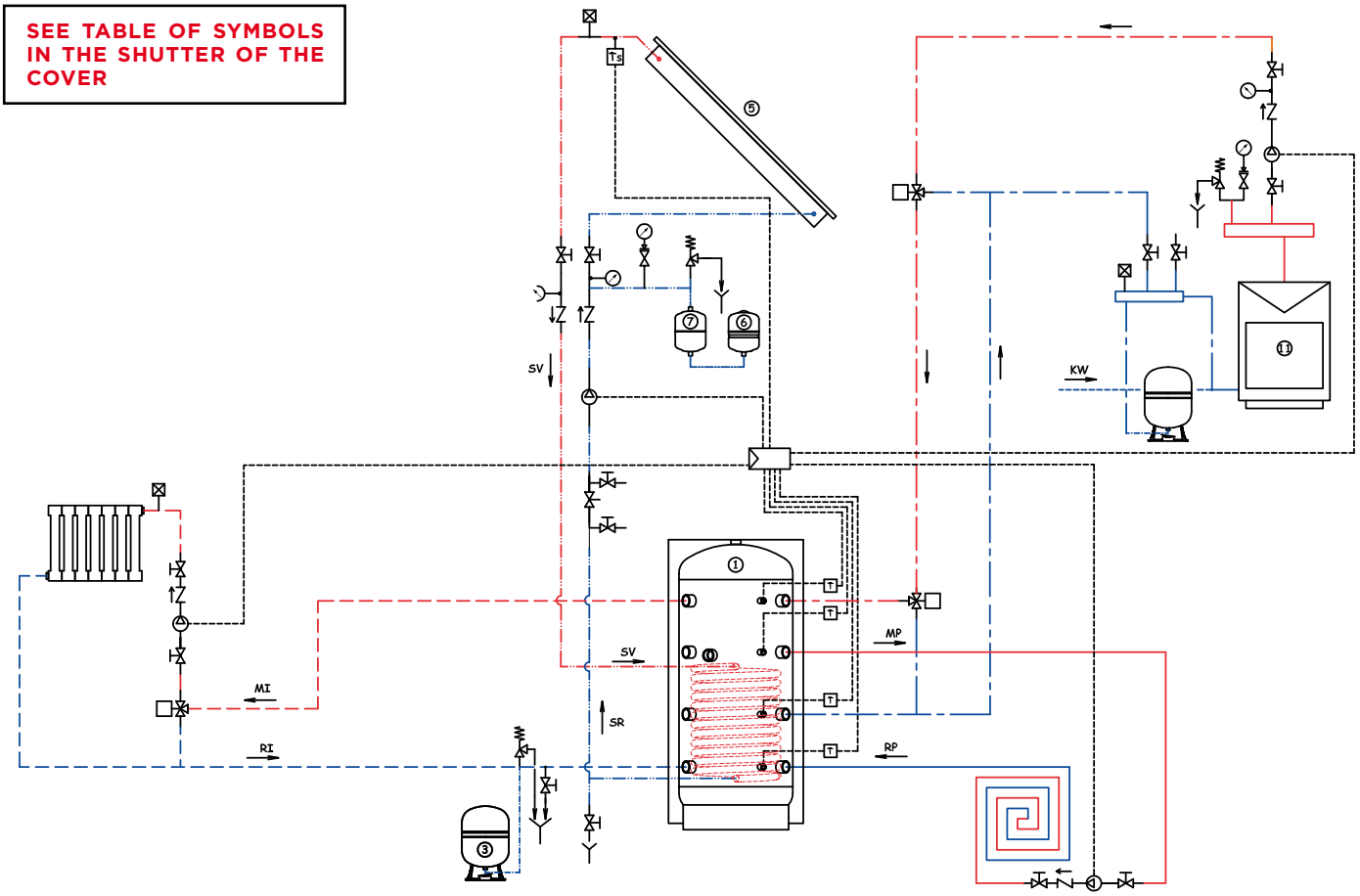
**ACCUMULATION AT 65 °C**
**LOWER HEAT EXCHANGER:** T.inlet = 80°C; ΔT = 10°C
**STORAGE TANK:** T.inlet =55°C; T.accumulation = 65°C




| MODEL | HEAT EXCHANGER [m²] | THERMAL POWER [kW] | PUMP CAPACITY [l/hour] |
|---|---|---|---|
| PPS1-300 | 1,5 | 13,1 | 1150 |
| PPS1-500 | 2,1 | 18,3 | 1610 |
| PPS1-800 | 2,4 | 21,0 | 1840 |
| PPS1-1000 | 3,0 | 26,2 | 2300 |
| PPS1-1500 | 4,1 | 35,8 | 3140 |
| PPS1-2000 | 4,6 | 40,1 | 3520 |

## HYDRAULIC DIAGRAM

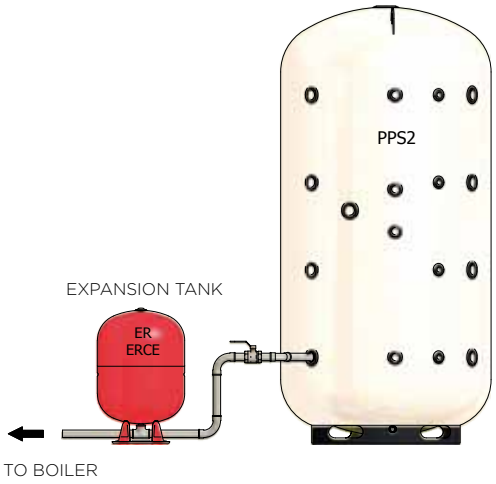
**SEE TABLE OF SYMBOLS IN THE SHUTTER OF THE COVER**



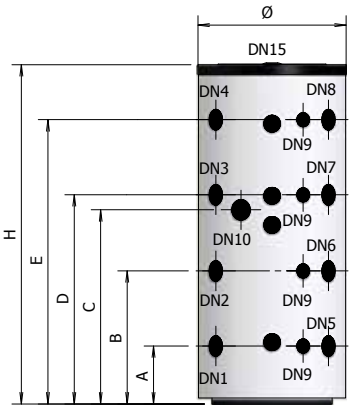
# PPS2

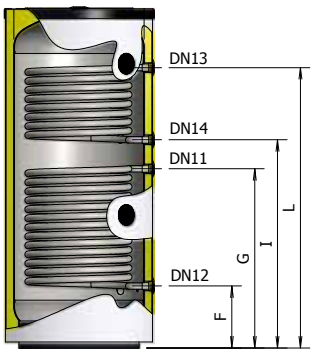
## BUFFER TANK FOR HEATING SYSTEMS

WITH TWO FIXED SPIRAL COILS FOR HEATING APPLICATIONS (300 - 2.000 LITRES)

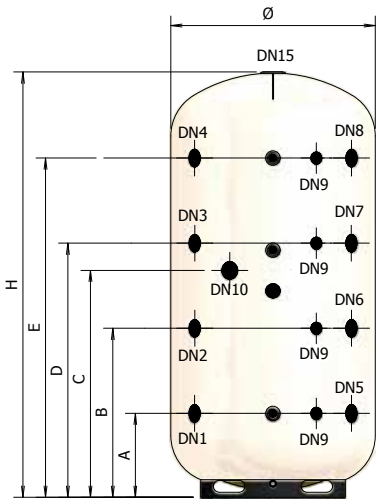


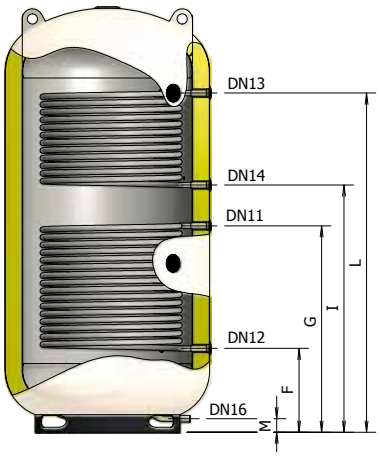

### PPS2 300 - 500




### PPS2 800 - 1000 - 1500 - 2000




**KEYWORD**

**DN1:** from heating system; **DN2:** auxiliary connection; **DN3:** auxiliary connection; **DN4:** to heating system; **DN5:** from floor heating system; **DN6:** to biomass boiler; **DN7:** to floor heating system; **DN8:** from biomass boiler; **DN9:** probes; **DN10:** electric heating element ; **DN11:** lower (solar) heat exchanger inlet; **DN12:** lower (solar) heat exchanger outlet; **DN13:** upper heat exchanger inlet; **DN14:** upper heat exchanger outlet; **DN15:** auxiliary connection; **DN16:** drain.

- HOT WATER STORAGE TANK
- HANDLING BY FORKLIFT
- FOR HEATING SYSTEMS
- POLYURETHANE INSULATION
- HOT WATER CYLINDER
- SUITABLE FOR SOLAR SYSTEMS

+ 95°C
CYLINDER MAX WORKING TEMPERATURE

+110°C
HEAT EXCHANGER MAX TEMPERATURE

$P_{MAX}$ 10 bar (300 - 1000)
6 bar (1500 - 2000)
MAX WORKING PRESSURE

$P_{SCA}$ 12 bar
HEAT EXCHANGER MAX WORKING PRESSURE

**WARRANTY: 2 YEARS**

**INSULATION:**

EXPANDED POLYURETHANE

**REFERENCE STANDARDS**

**ACCUMULATOR:**

Directive PED 97/23/CE – ART. 3.3, without CE marking

**INSTALLATION:**

- traditional boilers (wall-hung and/or floor-standing)
- pellet boilers
- biomass boilers
- burning thermo-fireplaces
- solar heating systems

## DIMENSIONS

| MODEL | CODE | | HEAT EXCHANGER LOWER | | HEAT EXCHANGER UPPER | | | | | | NOTES |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | LITRES | m² | LITRES | m² | LITRES | mm | mm | DN 1 | DN 2 | |
| PPS2-300 | A3Z2L51 PGP40 | 300 | 1,5 | 9 | 0,8 | 5 | 650 | 1400 | 1"1/2 | 1"1/2 | |
| PPS2-500 | A3Z2L55 PGP40 | 500 | 2,1 | 14 | 1,3 | 8 | 750 | 1695 | 1"1/2 | 1"1/2 | |
| PPS2-800 | A3Z2L60 PGP40 | 800 | 2,4 | 16 | 1,7 | 10 | 900 | 1835 | 1"1/2 | 1"1/2 | |
| PPS2-1000 | A3Z2L62 PGP40 | 1000 | 3,0 | 20 | 2,4 | 15 | 900 | 2285 | 1"1/2 | 1"1/2 | |
| PPS2-1500 | A3Z2H67 P9016 | 1500 | 4,1 | 26 | 3,0 | 19 | 1100 | 2495 | 1"1/2 | 1"1/2 | |
| PPS2-2000 | A3Z2H70 P9016 | 2000 | 4,6 | 30 | 3,4 | 21 | 1200 | 2475 | 1"1/2 | 1"1/2 | |

| MODEL | DN3 | DN4 | DN5 | DN6 | DN7 | DN8 | DN9 | DN10 | DN11 | DN12 | DN13 | DN14 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| PPS2-300 | 1"1/2 | 1"1/2 | 1"1/2 | 1"1/2 | 1"1/2 | 1"1/2 | 1/2" | 1"1/2 | 1" | 1" | 1" | 1" |
| PPS2-500 | 1"1/2 | 1"1/2 | 1"1/2 | 1"1/2 | 1"1/2 | 1"1/2 | 1/2" | 1"1/2 | 1" | 1" | 1" | 1" |
| PPS2-800 | 1"1/2 | 1"1/2 | 1"1/2 | 1"1/2 | 1"1/2 | 1"1/2 | 1/2" | 1"1/2 | 1" | 1" | 1" | 1" |
| PPS2-1000 | 1"1/2 | 1"1/2 | 1"1/2 | 1"1/2 | 1"1/2 | 1"1/2 | 1/2" | 1"1/2 | 1" | 1" | 1" | 1" |
| PPS2-1500 | 1"1/2 | 1"1/2 | 1"1/2 | 1"1/2 | 1"1/2 | 1"1/2 | 1/2" | 1"1/2 | 1" | 1" | 1" | 1" |
| PPS2-2000 | 1"1/2 | 1"1/2 | 1"1/2 | 1"1/2 | 1"1/2 | 1"1/2 | 1/2" | 1"1/2 | 1" | 1" | 1" | 1" |

| MODEL | DN15 | DN16 | A mm | B mm | C mm | D mm | E mm | F mm | G mm | I mm | L mm | M mm |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| PPS2-300 | 1"1/4 | / | 270 | 560 | 845 | 860 | 1150 | 250 | 790 | 900 | 1170 | / |
| PPS2-500 | 1"1/ | / | 290 | 665 | 970 | 1045 | 1420 | 310 | 895 | 1040 | 1400 | / |
| PPS2-800 | 1"1/2 | / | 365 | 715 | 980 | 1065 | 1415 | 345 | 930 | 1030 | 1435 | / |
| PPS2-1000 | 1"1/2 | / | 365 | 865 | 115 | 1365 | 1865 | 365 | 1085 | 1280 | 1865 | / |
| PPS2-1500 | 3" | 1" | 495 | 995 | 1335 | 1495 | 1995 | 495 | 1215 | 1455 | 1995 | 80 |
| PPS2-2000 | 3" | 1" | 485 | 985 | 1325 | 1485 | 1985 | 485 | 1205 | 1445 | 1985 | 80 |

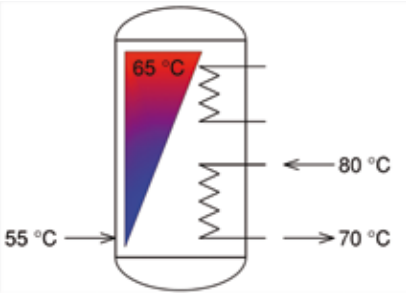
## TECHNICAL CHARACTERISTICS

| MODEL | CYLINDER | | HEAT ECHANGERS | |
|---|---|---|---|---|
| | MAX WORKING PRESSURE | MAX WORKING TEMPERATURE | MAX WORKING PRESSURE | MAX WORKING TEMPERATURE |
| PPS2-300 | 10 bar | 95 °C | 12 bar | 110 °C |
| PPS2-500 | | | | |
| PPS2-800 | | | | |
| PPS2-1000 | | | | |
| PPS2-1500 | 6 bar | | | |
| PPS2-2000 | | | | |

| MODEL | INSULATION TYPE | INSULATION THICKNESS | INSULATION DENSITY | INITIAL THERMAL CONDUCTIVITY | (*) INSULATION THERMAL LOSS | EXTERNAL COVER |
|---|---|---|---|---|---|---|
| PPS2-300 | 95% closed cells rigid expanded polyurethane, CFC - HCFC free | 50 mm | 40 Kg/m³ | 23,5 mW/m K | 1,29 kW / 24h | Grey polystyrene RAL 9006 |
| PPS2-500 | | | | | 1,84 kW / 24h | |
| PPS2-800 | | | | | 2,37 kW / 24h | |
| PPS2-1000 | | | | | 2,71 kW / 24h | |
| PPS2-1500 | Open cells flexible expanded polyurethane | | 15 Kg/m³ | 39 mW/m K | 6,53 kW / 24h | White Skay RAL 9001 |
| PPS2-2000 | | | | | 7,15 kW / 24h | |

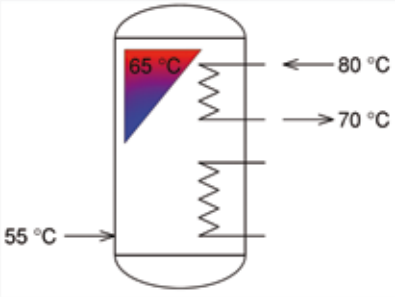
(*) Thermal loss calculated with an accumulation temperature equal to 60 °C and with an external temperature equal to 15 °C.

**ACCUMULATION AT 65 °C**
**LOWER HEAT EXCHANGER:** T.inlet = 80°C; ΔT = 10°C
**STORAGE TANK:** T.inlet =55°C; T.accumulation = 65°C



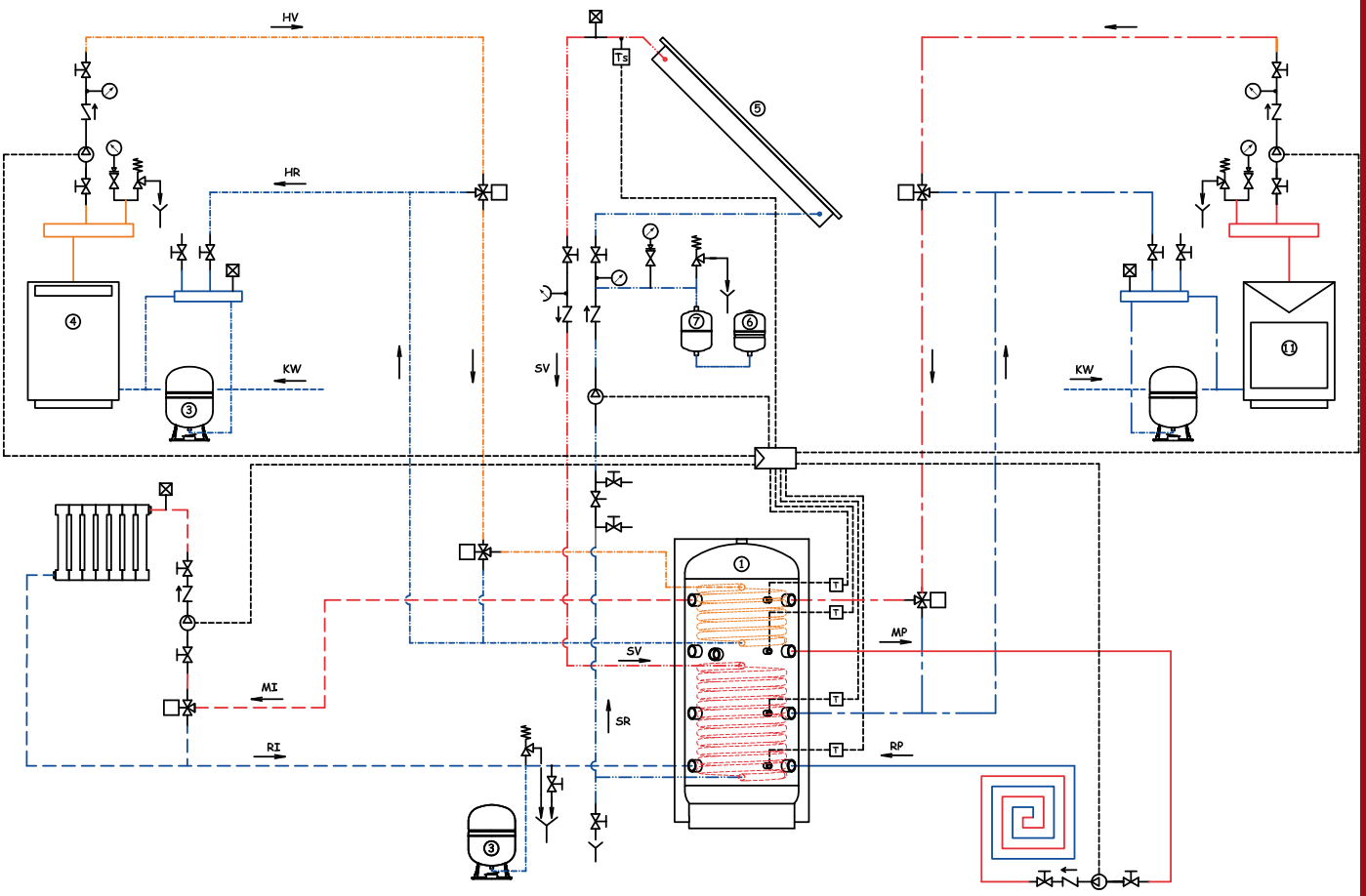

| MODEL | HEAT EXCHANGER [m²] | THERMAL POWER [kW] | PUMP CAPACITY [l/hour] |
|---|---|---|---|
| PPS2-300 | 1,5 | 13,1 | 1150 |
| PPS2-500 | 2,1 | 18,3 | 1610 |
| PPS2-800 | 2,4 | 21,0 | 1840 |
| PPS2-1000 | 3,0 | 26,2 | 2300 |
| PPS2-1500 | 4,1 | 35,8 | 3140 |
| PPS2-2000 | 4,6 | 40,1 | 3520 |

**ACCUMULATION AT 65 °C**
**UPPER HEAT EXCHANGER:** T.inlet = 80°C; ΔT = 10°C
**STORAGE TANK:** T.inlet =55°C; T.accumulation = 65°C




| MODEL | HEAT EXCHANGER [m²] | THERMAL POWER [kW] | PUMP CAPACITY [l/hour] |
|---|---|---|---|
| PPS2-300 | 0,8 | 7,0 | 610 |
| PPS2-500 | 1,3 | 11,3 | 995 |
| PPS2-800 | 1,7 | 14,8 | 1300 |
| PPS2-1000 | 2,4 | 21,0 | 1840 |
| PPS2-1500 | 3 | 26,2 | 2300 |
| PPS2-2000 | 3,4 | 29,6 | 2600 |

**SEE TABLE OF SYMBOLS IN THE SHUTTER OF THE COVER**



**Heating element model WITHOUT THERMOSTAT**

**Water heating time from 15° C to 60 °C (expressed in minutes)** / *The heating times outlined are approximate*

| CODE | Power (kW) | Voltage (Volt) | Connection | Length (mm) | 150 | 200 | 300 | 400 | 500 | 800 | 1000 | 1500 | 2000 | 3000 | 5000 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 8601000 | 1 | 220 V / MF | G 1.1/4" | 295 | 480 min. | 630 min. | 960 min. | 1270 min. | 1580 min. | 2520 min. | 3150 min. | 4720 min. | 6300 min. | 9420 min. | 15750 min. |
| 8601650 | 1.65 | 220 V / MF | G 1.1/4" | 450 | 285 min. | 380 min. | 580 min. | 770 min. | 970 min. | 1550 min. | 1920 min. | 2870 min. | 3820 min. | 5740 min. | 9550 min. |
| 8602000 | 2 | 220 V / MF | G 1.1/4" | 515 | n.a. | n.a. | n.a. | 640 min. | 800 min. | 1270 min. | 1580 min. | 2370 min. | 3150 min. | 4740 min. | 7875 min. |
| 8602600 | 2.6 | 220 V / MF | G 1.1/4" | 675 | n.a. | n.a. | n.a. | n.a. | n.a. | 980 min. | 1230 min. | 1830 min. | 2450 min. | 3660 min. | 6125 min. |
| 8602601 | 2.6 | 220 V / MF | G 1.1/4" | 360 | 180 min. | 250 min. | 370 min. | 490 min. | 630 min. | 980 min. | 1230 min. | 1830 min. | 2450 min. | 3660 min. | 6125 min. |
| 8603300 | 3.3 | 220 V / MF | G 1.1/4" | 825 | n.a. | n.a. | n.a. | n.a. | n.a. | n.a. | n.a. | 1450 min. | 1940 min. | 2900 min. | 4850 min. |
| 8603301 | 3.3 | 220 V / MF | G 1.1/4" | 435 | 145 min. | 200 min. | 295 min. | 390 min. | 490 min. | 780 min. | 980 min. | 1450 min. | 1940 min. | 2900 min. | 4850 min. |
| 8604001 | 4 | 220 V / MF | G 1.1/4" | 510 | n.a. | n.a. | n.a. | 320 min. | 410 min. | 640 min. | 800 min. | 1200 min. | 1600 min. | 2400 min. | 4000 min. |
| 8705000 | 5 | 380 V / TF | G 1.1/2" | 445 | 95 min. | 140 min. | 200 min. | 260 min. | 330 min. | 520 min. | 640 min. | 950 min. | 1300 min. | 1900 min. | 3250 min. |
| 8706000 | 6 | 380 V / TF | G 1.1/2" | 510 | n.a. | n.a. | n.a. | 220 min. | 280 min. | 430 min. | 540 min. | 800 min. | 1060 min. | 1600 min. | 2650 min. |
| 8708000 | 8 | 380 V / TF | G 1.1/2" | 670 | n.a. | n.a. | n.a. | n.a. | n.a. | 330 min. | 420 min. | 610 min. | 800 min. | 1220 min. | 2000 min. |
| 8710000 | 10 | 380 V / TF | G 1.1/2" | 820 | n.a. | n.a. | n.a. | n.a. | n.a. | n.a. | n.a. | 490 min. | 640 min. | 980 min. | 1600 min. |
| 8712000 | 12 | 380 V / TF | G 1.1/2" | 970 | n.a. | n.a. | n.a. | n.a. | n.a. | n.a. | n.a. | 410 min. | 540 min. | 820 min. | 1350 min. |

n.a. = Heating element not applicable

**Heating element model WITH THERMOSTAT**

**Water heating time from 15° C to 60 °C (expressed in minutes)** / *The heating times outlined are approximate*

| CODE | Power (kW) | Voltage (Volt) | Connection | Length (mm) | 150 | 200 | 300 | 400 | 500 | 800 | 1000 | 1500 | 2000 | 3000 | 5000 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 8T01500 | 1.5 | 230 V / MF | G 1.1/2" | 320 | 320 min. | 430 min. | 640 min. | 850 min. | 1060 min. | 1690 min. | 2110 min. | 3150 min. | 4200 min. | 6300 min. | 10500 min. |
| 8T02000 | 2.0 | 230 V / MF | G 1.1/2" | 320 | 250 min. | 330 min. | 490 min. | 640 min. | 800 min. | 1270 min. | 1590 min. | 2370 min. | 3160 min. | 4750 min. | 7870 min. |
| 8T02200 | 2.2 | 230 V / MF | G 1.1/2" | 320 | 230 min. | 300 min. | 440 min. | 590 min. | 730 min. | 1160 min. | 1440 min. | 2170 min. | 2870 min. | 4300 min. | 7150 min. |
| 8T02500 | 2.5 | 230 V / MF | G 1.1/2" | 320 | 200 min. | 270 min. | 390 min. | 520 min. | 640 min. | 1020 min. | 1270 min. | 1910 min. | 2530 min. | 3800 min. | 6300 min. |
| 8T03000 | 3 | 230 V / MF | G 1.1/2" | 320 | 170 min. | 220 min. | 330 min. | 430 min. | 540 min. | 850 min. | 1060 min. | 1600 min. | 2110 min. | 3160 min. | 5250 min. |
| 8T05000 | 5 | 400 V / TF | G 1.1/2" | 500 | n.a. | n.a. | n.a. | 260 min. | 330 min. | 520 min. | 640 min. | 950 min. | 1300 min. | 1900 min. | 3250 min. |
| 8T06000 | 6 | 400 V / TF | G 1.1/2" | 600 | n.a. | n.a. | n.a. | 220 min. | 280 min. | 430 min. | 540 min. | 800 min. | 1060 min. | 1600 min. | 2650 min. |
| 8T09000 | 9 | 400 V / TF | G 1.1/2" | 700 | n.a. | n.a. | n.a. | n.a. | n.a. | 290 min. | 360 min. | 540 min. | 710 min. | 1060 min. | 1760 min. |
| 8T12000 | 12 | 400 V / TF | G 1.1/2" | 850 | n.a. | n.a. | n.a. | n.a. | n.a. | n.a. | n.a. | 410 min. | 540 min. | 820 min. | 1350 min. |

n.a. = Heating element not applicable

# MAINTENANCE:

**The CUSTOMER HAS THE RIGHT to ask his trusted installation technician to carry out maintenance.**
**It is the DUTY OF THE INSTALLATION TECHNICIAN to guarantee maintenance is STATE OF THE ART.**

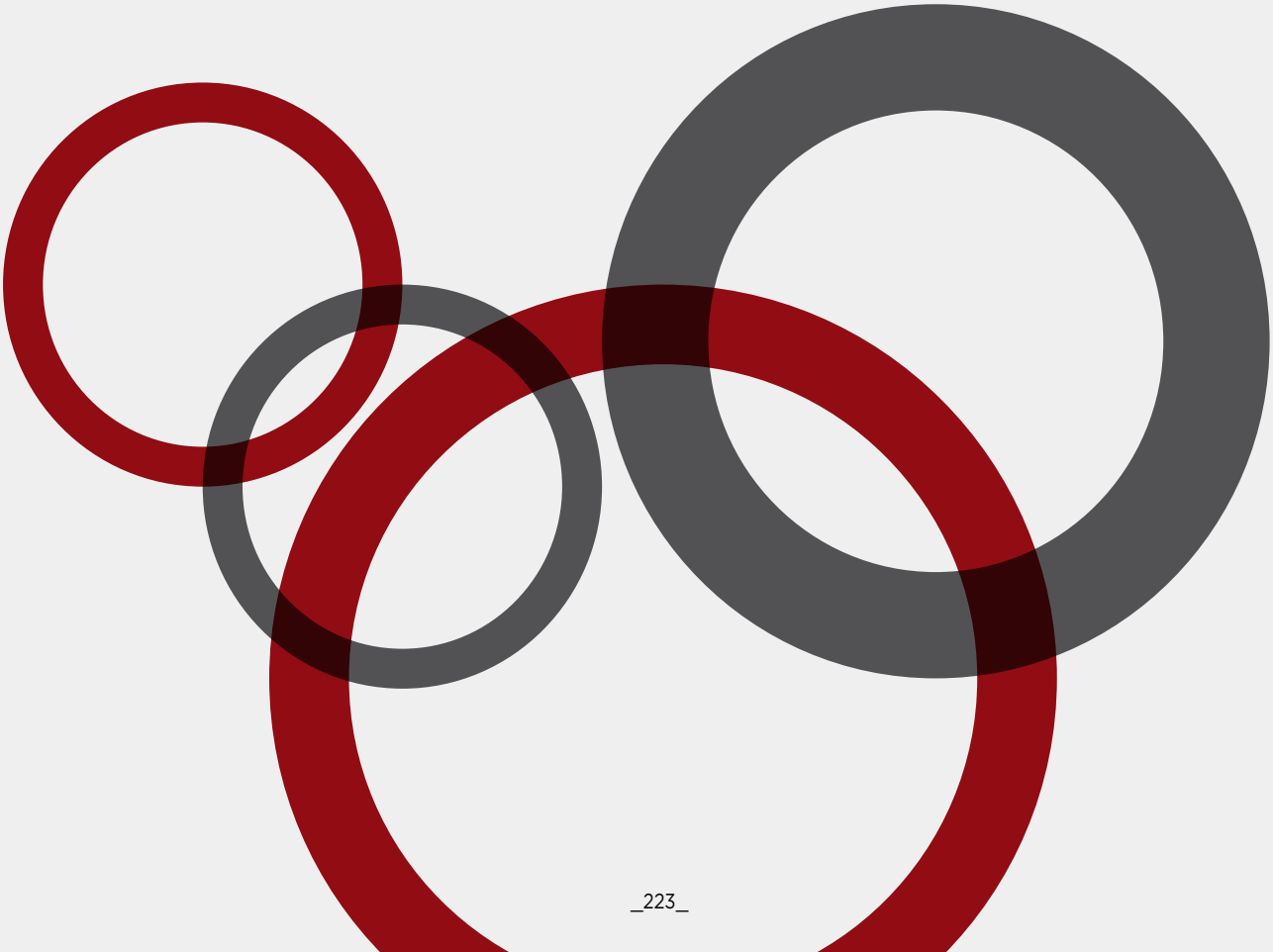
What points ensure state of the art maintenance?

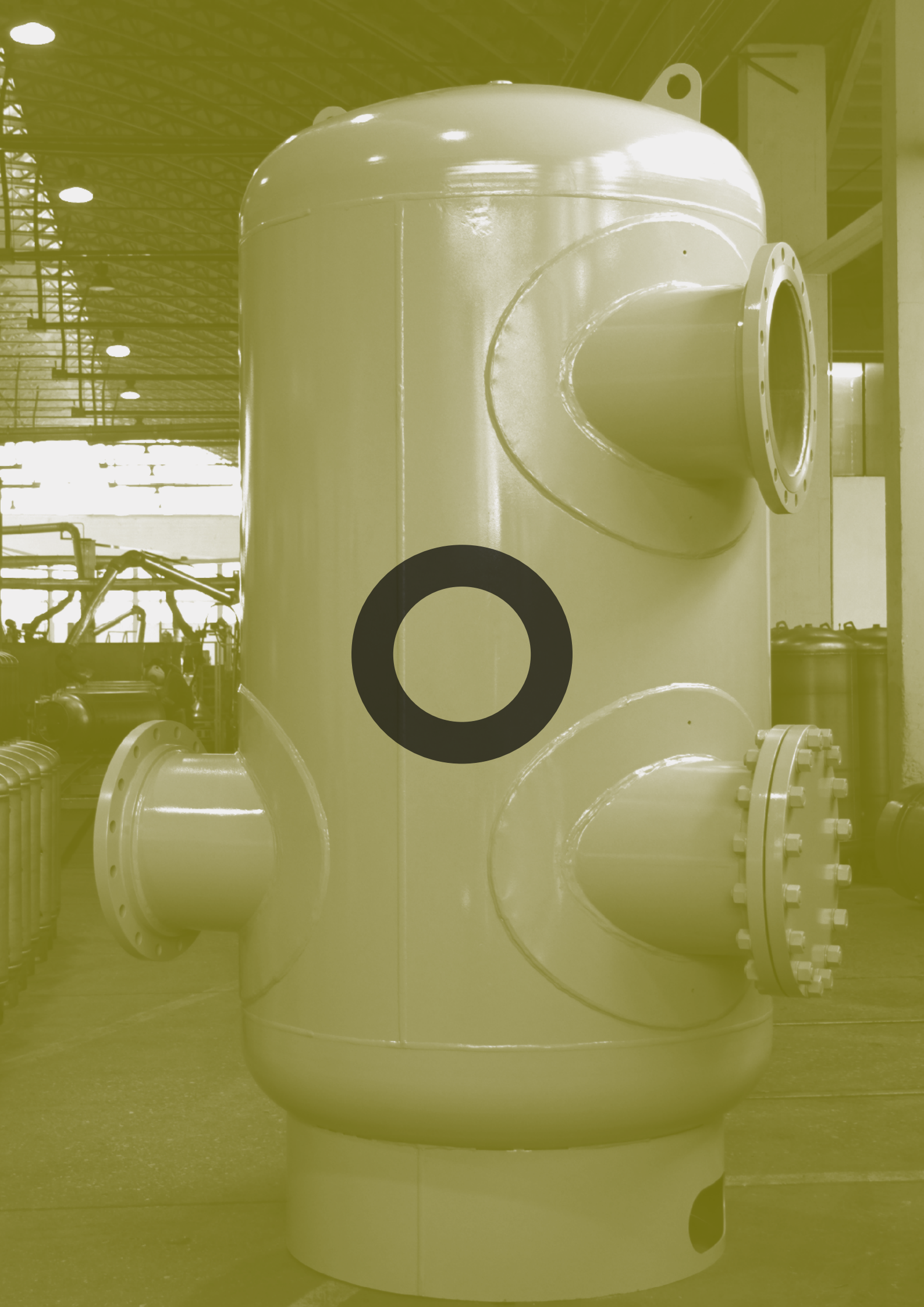
**1. SAFETY DEVICES**
**1.a** EXPANSION TANKS ON THE PRIMARY CIRCUIT (HEATING SIDE): should be sized correctly and the suitable model chosen (e.g. ELBI ERCE series). Furthermore, the correct pre-charge value applied to the tank should be periodically checked.
**1.b** EXPANSION TANKS ON THE SECONDARY CIRCUIT (SANITARY SIDE): they should be correctly sized and the suitable model chosen (e.g. ELBI D-DV series). Furthermore, the correct pre-charge value applied to the vase should be periodically checked.
**1.c** SAFETY VALVE ON THE SECONDARY CIRCUIT (SANITARY SIDE): its functionality should be periodically controlled.

**2. STORAGE TEMPERATURE**
You are advised to store water at a temperature between 55 °C and 60 °C.
This is because at 55 °C you eliminate problems relating to Legionella and bacteria proliferation, while storage water at a temperature over 60 °C increases the formation of lime scale deposits and increases water abrasion.
Furthermore, with the temperature too high wear of the anode is increased and more frequent cylinder maintenance will be required.

**3. WATER QUALITY**
Sanitary water contained in the cylinders must comply with the parameters:
**pH = 6,5 ÷ 8,0:** this ensures you are not using water that is too aggressive for the internal glasslined surfaces of the cylinders.
**Hardness = 15 °f ÷ 30 °f** : this avoids excess lime scale deposits forming that can accumulate in the cylinder and on the magnesium anode isolating it electrically and making it inefficient. You are also advised to filter the inbound sanitary water in the cylinders to avoid sand, soil, rust, lime scale etc. particles building up on the bottom of the cylinder which can be found in the water mains.

**4. MAGNESIUM ANODE**
Before operating the cylinder, ensure the anodes are connected to the tank unit to guarantee electricity conduction. A correct anode connection guarantees cylinder protection against electro-chemical and electro-galvanic corrosion. It is therefore good practice to periodically check the wear status of the anode and any presence of a layer of lime scale that would make it inefficient and, if necessary, replace it.
N.B. For further information on maintenance of the cylinders and the various safety devices (expansion tanks, anode, safety valve, etc.), refer to the related installation use and maintenance sheets.





ASME

# ASME

## ASME TANKS

**228. AS:**
AIR SEPARATORS (WITH OR WITHOUT STRAINER) (45 – 8,530 LITRES)

**230. DT:**
THERMAL EXPANSION TANKS FOR SANITARY WATER (8 – 5.000 LITRES)

**232. HT:**
HYDRONIC HEATING EXPANSION TANKS FOR HEATING SYSTEMS (150 PSI) (8 – 5.000 LITRES)

**234. WTL-2:**
COLD WATER BOOSTER TANKS: SANITARY BLADDER AUTOCLAVES FOR COLD WATER (200 PSI) (450 – 800 LITRES)

**235.** DIAGRAM OF PRESSURE DROPS FOR AIR SEPARATORS

# ASME

The ASME (HTL-DTL WTL-2) bladder tanks can be used both as expansion tanks for sanitary systems, therefore suitable for absorbing the various volumes caused by the increase in temperature, and as autoclaves in the sanitary systems for cold water. This dual use ensures protection against corrosion of the walls of the tank and suitability for contact with sanitary water.
The tanks are composed according to the strict ASME (American Society of Mechanical Engineers) standards and issued with Stamp U or Stamp UM.

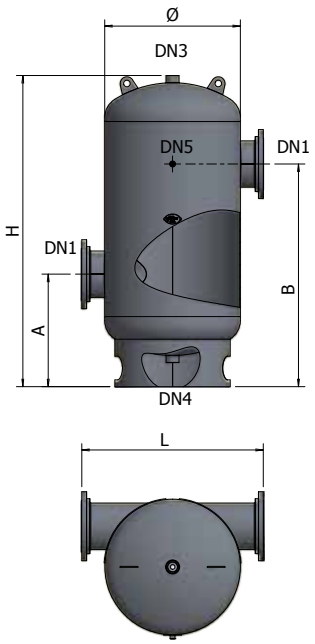
**AIR SEPARATOR**

The ELBI ASME tangential air separators were designed to create a low velocity vortex to separate and remove air in the non-sanitary, closed circuits.
Available with 2" to 24" connections, with or without an internal strainer in stainless steel.
The air separators are built according to strict ASME (American Society of Mechanical Engineers) standards and issued with Stamp U or Stamp UM.

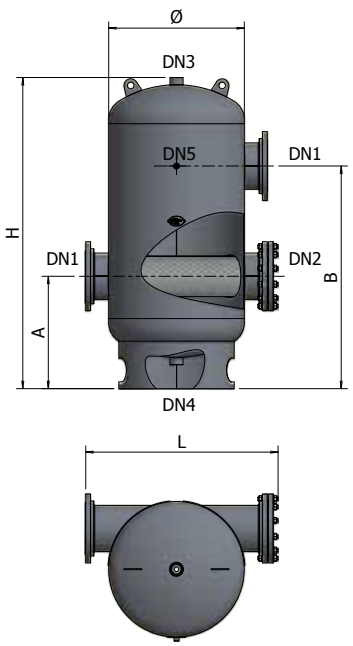
# AS - ASME AIR SEPARATORS

## AIR SEPARATORS (WITH OR WITHOUT STRAINER)

## ASL




## ASW




U ASME U approved

UM ASME UM approved

For heating systems

For air conditioning systems

**Characteristics:**
• Working temperature: -30° / +190°C

• Solvent painted, grey

**Pressure drop**
Consult the diagrams on page 235.

**Reference standard**
• ASME (American Society of Mechanical Engineers), stamp U and UM

**WARRANTY: 2 YEARS**

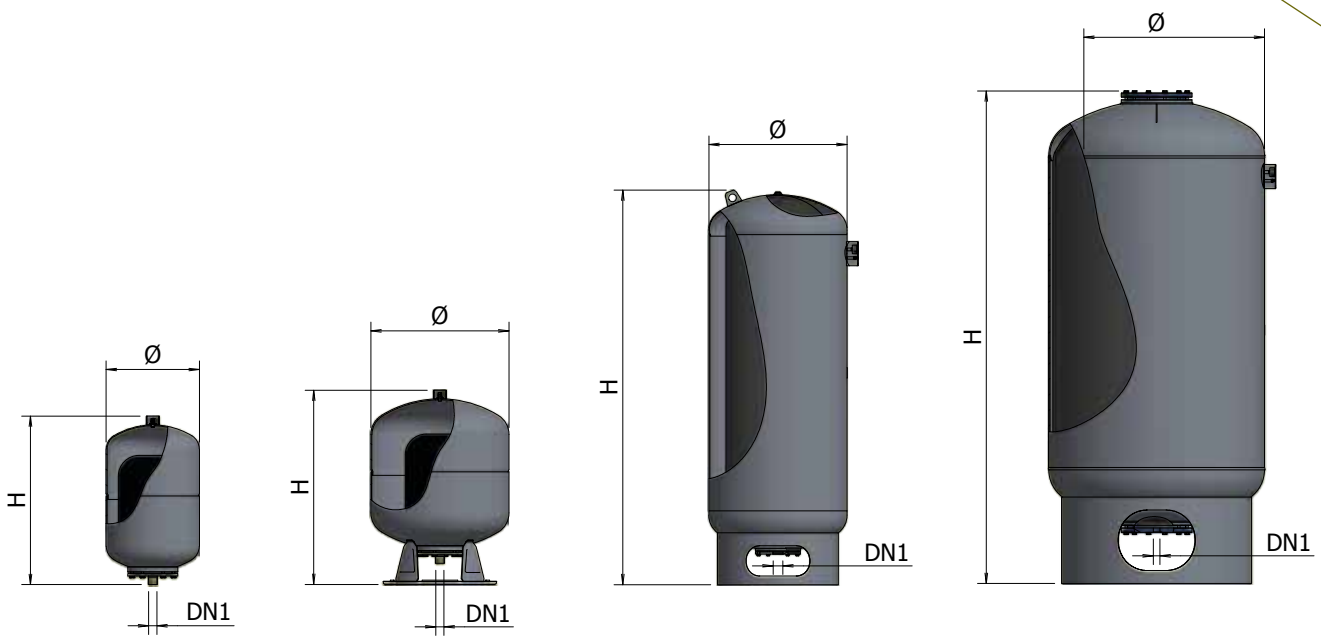
## DIMENSIONS

| MODEL | CODE | | | Pmax | Pmax | | | | | | | | | DN1 | DN2 | NOTES |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | gal. | L. | PSI | bar | °F | °C | in. | mm | in. | mm | in. | mm | | | |
| ASL 020T | ADI4L33 | 12 | 45 | 150 | 10 | 375 | 190 | 13.8 | 350 | 26.3 | 668 | 19.3 | 490 | 2” | 2” | |
| ASL 025T | ADJ4L33 | 12 | 45 | 150 | 10 | 375 | 190 | 13.8 | 350 | 26.3 | 668 | 19.3 | 490 | 2-1/2” | 2-1/2” | |
| ASL 030 | ADK4L33 | 12 | 45 | 150 | 10 | 375 | 190 | 13.8 | 350 | 26.3 | 668 | 21.2 | 538 | 3” | 3” | |
| ASL 040 | ADM4L37 | 22.6 | 86 | 150 | 10 | 375 | 190 | 15.8 | 400 | 35.6 | 904 | 21.7 | 551 | 4” | 4” | |
| ASL 050 | ADN4L37 | 22.6 | 86 | 150 | 10 | 375 | 190 | 15.8 | 400 | 35.6 | 904 | 21.7 | 551 | 5” | 5” | |
| ASL 060 | ADO4J47 | 50 | 189 | 125 | 8,5 | 375 | 190 | 19.7 | 500 | 48 | 1219 | 28 | 711 | 6” | 6” | |
| ASL 080 | ADP4J47 | 50 | 189 | 125 | 8,5 | 375 | 190 | 19.7 | 500 | 48 | 1219 | 28 | 711 | 8” | 8” | |
| ASL 100 | ADQ4J58 | 189 | 715 | 125 | 8,5 | 375 | 190 | 31.5 | 800 | 67.7 | 1720 | 41 | 1041 | 10” | 10” | |
| ASL 120 | ADR4J58 | 189 | 715 | 125 | 8,5 | 375 | 190 | 31.5 | 800 | 67.7 | 1720 | 41 | 1041 | 12” | 12” | |
| ASL 140 | ADS4J64 | 330 | 1249 | 125 | 8,5 | 375 | 190 | 37.4 | 950 | 85.2 | 2164 | 46.5 | 1181 | 14” | 14” | |
| ASL 160* | ADT4J72 | 666 | 2521 | 125 | 8,5 | 375 | 190 | 49.2 | 1250 | 108.5 | 2756 | 56.3 | 1500 | 16” | 16” | |
| ASL 180* | ADU4J77 | 1179 | 4463 | 125 | 8,5 | 375 | 190 | 61 | 1550 | 115.7 | 2939 | 68.9 | 1750 | 18” | 18” | |
| ASL 200* | ADV4J84 | 1507 | 5705 | 125 | 8,5 | 375 | 190 | 61 | 1550 | 142.6 | 3622 | 72 | 1830 | 20” | 20” | |
| ASL 240* | ADW4J92 | 2253 | 8530 | 125 | 8,5 | 375 | 190 | 61 | 1550 | 202.3 | 5139 | 80.3 | 2040 | 24” | 24” | |
| ASW 020T | AEI4L33 | 12 | 45 | 150 | 10 | 375 | 190 | 13.8 | 350 | 26.3 | 668 | 19.3 | 490 | 2” | 2” | |
| ASW 025T | AEJ4L33 | 12 | 45 | 150 | 10 | 375 | 190 | 13.8 | 350 | 26.3 | 668 | 19.3 | 490 | 2-1/2” | 2-1/2” | |
| ASW 030 | AEK4L33 | 12 | 45 | 150 | 10 | 375 | 190 | 13.8 | 350 | 26.3 | 668 | 21.2 | 538 | 3” | 3” | |
| ASW 040 | AEM4L37 | 22.6 | 86 | 150 | 10 | 375 | 190 | 15.8 | 400 | 35.6 | 904 | 21.7 | 551 | 4” | 4” | |
| ASW 050 | AEN4L37 | 22.6 | 86 | 150 | 10 | 375 | 190 | 15.8 | 400 | 35.6 | 904 | 21.7 | 551 | 5” | 5” | |
| ASW 060 | AEO4J47 | 50 | 189 | 125 | 8,5 | 375 | 190 | 19.7 | 500 | 48 | 1219 | 28 | 711 | 6” | 6” | |
| ASW 080 | AEP4J47 | 50 | 189 | 125 | 8,5 | 375 | 190 | 19.7 | 500 | 48 | 1219 | 28 | 711 | 8” | 8” | |
| ASW 100 | AEQ4J58 | 189 | 715 | 125 | 8,5 | 375 | 190 | 31.5 | 800 | 67.7 | 1720 | 41 | 1041 | 10” | 10” | |
| ASW 120 | AER4J58 | 189 | 715 | 125 | 8,5 | 375 | 190 | 31.5 | 800 | 67.7 | 1720 | 41 | 1041 | 12” | 12” | |
| ASW 140 | AES4J64 | 330 | 1249 | 125 | 8,5 | 375 | 190 | 37.4 | 950 | 85.2 | 2164 | 46.5 | 1181 | 14” | 14” | |
| ASW 160* | AET4J72 | 666 | 2521 | 125 | 8,5 | 375 | 190 | 49.2 | 1250 | 108.5 | 2756 | 56.3 | 1500 | 16” | 16” | |
| ASW 180* | AEU4J77 | 1179 | 4463 | 125 | 8,5 | 375 | 190 | 61 | 1550 | 115.7 | 2939 | 68.9 | 1750 | 18” | 18” | |
| ASW 200* | AEV4J84 | 1507 | 5705 | 125 | 8,5 | 375 | 190 | 61 | 1550 | 142.6 | 3622 | 72 | 1830 | 20” | 20” | |
| ASW 240* | AEW4J92 | 2253 | 8530 | 125 | 8,5 | 375 | 190 | 61 | 1550 | 202.3 | 5139 | 80.3 | 2040 | 24” | 24” | |

* SPECIAL ORDER

# DT - THERMAL EXPANSION TANKS

## FOR SANITARY WATER




2 ÷ 8 gal. | 12 gal. | 21 ÷ 265 gal. | 320 ÷ 1320 gal.

- ASME U approved
- ASME UM approved
- For heating systems
- For air conditioning systems
- For drinking water
- For pressurisation systems

**Characteristics:**
- Working temperature: -10° / +115°C
- Solvent painted, grey
- Stainless steel counter-flange

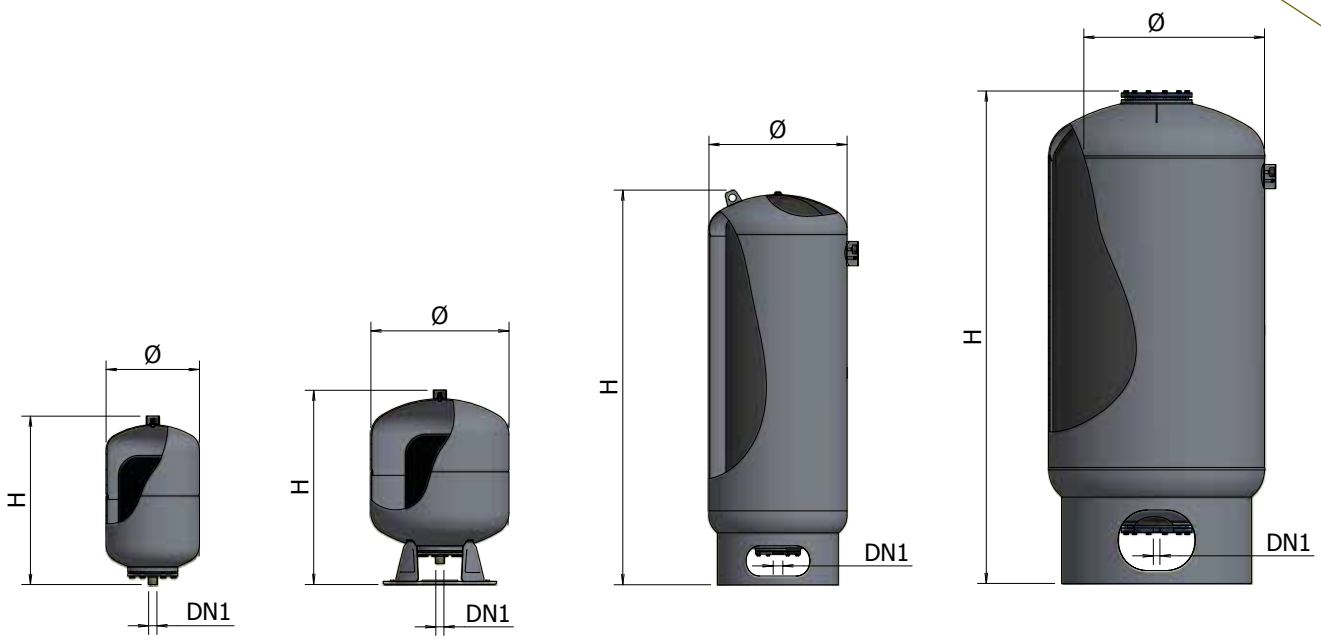
**Reference standard**
- ASME (American Society of Mechanical Engineers), stamp U and UM

**WARRANTY: 2 YEARS**

| MODEL | CODE | | | Ppre | Ppre | Pmax | Pmax | | | | | | | DN1 | NOTES |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | gal. | L. | PSI | bar | PSI | bar | °F | °C | in. | mm | in. | mm | | |
| DTS-8 | AA04L16 D0000 | 2 | 8 | 40 | 3 | 150 | 10 | 240 | 115 | 10.6 | 270 | 10.2 | 260 | 3/4" NPT | |
| DTS-19 | AA04L24 D0000 | 5.0 | 19 | 40 | 3 | 150 | 10 | 240 | 115 | 10.6 | 270 | 19.3 | 490 | 3/4" NPT | |
| DTS-30 | AA04L30 D0000 | 8.0 | 30 | 40 | 3 | 150 | 10 | 240 | 115 | 15.8 | 400 | 15.3 | 390 | 3/4" NPT | |
| DTS-45 | AA14L33 D0000 | 12.0 | 45 | 55 | 4 | 150 | 10 | 240 | 115 | 15.8 | 400 | 22.4 | 570 | 3/4" NPT | |
| DTS-80 | AA14L37 D0000 | 21.0 | 80 | 55 | 4 | 150 | 10 | 240 | 115 | 15.8 | 400 | 34.9 | 890 | 1" NPT | |
| DTS-100 | AA14L38 D0000 | 26.5 | 100 | 55 | 4 | 150 | 10 | 240 | 115 | 19.7 | 500 | 37.3 | 950 | 1" NPT | |
| DTS-140 | AA14L42 D0000 | 37.0 | 140 | 55 | 4 | 150 | 10 | 240 | 115 | 19.7 | 500 | 43.3 | 1100 | 1-1/4" NPT | |
| DTL-170 | AA34L45 D0000 | 44.0 | 170 | 55 | 4 | 150 | 10 | 240 | 115 | 19.7 | 500 | 48.7 | 1240 | 1-1/4" NPT | |
| DTL-200 | AA34L47 D0000 | 53.0 | 200 | 55 | 4 | 150 | 10 | 240 | 115 | 21.7 | 550 | 47.2 | 1200 | 1-1/4" NPT | |
| DTL-300 | AA34L51 D0000 | 80.0 | 300 | 55 | 4 | 150 | 10 | 240 | 115 | 25.6 | 650 | 49.0 | 1245 | 1-1/4" NPT | |
| DTL-400 | AA34L53 D0000 | 105.0 | 400 | 55 | 4 | 150 | 10 | 240 | 115 | 25.6 | 650 | 57.9 | 1470 | 1-1/4" NPT | |
| DTL-450 | AA44L54 D0000 | 120.0 | 450 | 55 | 4 | 150 | 10 | 240 | 115 | 29.5 | 750 | 54.7 | 1390 | 1-1/4" NPT | |
| DTL-500 | AA44L55 D0000 | 132.0 | 500 | 55 | 4 | 150 | 10 | 240 | 115 | 29.5 | 750 | 59.1 | 1500 | 1-1/4" NPT | |
| DTL-600 | AA44L57 D0000 | 160.0 | 600 | 55 | 4 | 150 | 10 | 240 | 115 | 25.6 | 650 | 87.8 | 2230 | 2" NPT | |
| DTL-800 | AA44L60 D0000 | 210.0 | 800 | 55 | 4 | 150 | 10 | 240 | 115 | 29.5 | 750 | 90.2 | 2290 | 2" NPT | |
| DTL-1000 | AA44L62 D0000 | 265.0 | 1000 | 55 | 4 | 150 | 10 | 240 | 115 | 31.5 | 800 | 90.2 | 2290 | 2" NPT | |
| DTL-1200 | AA44L64 D0000 | 320.0 | 1200 | 55 | 4 | 150 | 10 | 240 | 115 | 35.4 | 900 | 95.9 | 2435 | 2" NPT | |
| DTL-1400 | AA44L66 D0000 | 370.0 | 1400 | 55 | 4 | 150 | 10 | 240 | 115 | 37.4 | 950 | 97.6 | 2480 | 3" NPT | |
| DTL-1600 | AA44L68 D0000 | 420.0 | 1600 | 55 | 4 | 150 | 10 | 240 | 115 | 41.3 | 1050 | 98.4 | 2500 | 3" NPT | |
| DTL-2000 | AA44L70 D0000 | 530.0 | 2000 | 55 | 4 | 150 | 10 | 240 | 115 | 43.3 | 1100 | 107.1 | 2720 | 3" NPT | |
| DTL-3000 | AA44L74 D0000 | 790.0 | 3000 | 55 | 4 | 150 | 10 | 240 | 115 | 51.2 | 1300 | 113.0 | 2870 | 3" NPT | |
| DTL-4000 | AA44L77 D0000 | 1060.0 | 4000 | 55 | 4 | 150 | 10 | 240 | 115 | 61.0 | 1550 | 113.5 | 2885 | 3" NPT | |
| DTL-5000 | AA44L80 D0000 | 1320.0 | 5000 | 55 | 4 | 150 | 10 | 240 | 115 | 61.0 | 1550 | 123.2 | 3130 | 3" NPT | |

# HT - HYDRONIC HEATING EXPANSION TANKS

## FOR HEATING SYSTEMS (150 PSI)




2 ÷ 8 gal. | 12 gal. | 21 ÷ 265 gal. | 320 ÷ 1320 gal.

- ASME U approved
- ASME UM approved
- For heating systems
- For air conditioning systems
- For drinking water
- For pressurisation systems

**Characteristics:**
- Working temperature: -10° / +115°C
- Solvent painted, grey
- Counter-flange with Top-Pro treatment (8 - 1200 litres)
- Glasslined counter-flange (1,400 – 5.000)

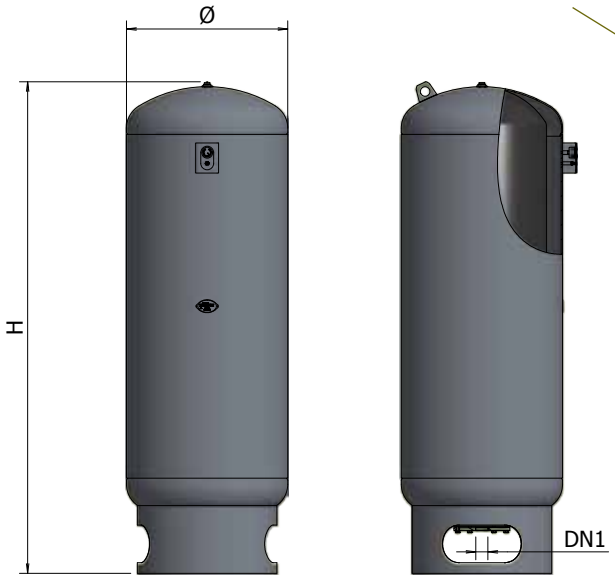
**Reference standard**
- ASME (American Society of Mechanical Engineers), stamp U and UM

**WARRANTY: 2 YEARS**

| MODEL | CODE | | | Ppre | Ppre | Pmax | Pmax | | | | | | | DN1 | NOTES |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | gal. | L. | PSI | bar | PSI | bar | °F | °C | in. | mm | in. | mm | | |
| HTS-8 | AA04L16 H0000 | 2 | 8 | 12 | 1 | 150 | 10 | 240 | 115 | 10.6 | 270 | 10.2 | 260 | 3/4" NPT | |
| HTS-19 | AA04L24 H0000 | 5.0 | 19 | 12 | 1 | 150 | 10 | 240 | 115 | 10.6 | 270 | 19.3 | 490 | 3/4" NPT | |
| HTS-30 | AA04L30 H0000 | 8.0 | 30 | 12 | 1 | 150 | 10 | 240 | 115 | 15.8 | 400 | 15.3 | 390 | 3/4" NPT | |
| HTS-45 | AA14L33 H0000 | 12.0 | 45 | 12 | 1 | 150 | 10 | 240 | 115 | 15.8 | 400 | 22.4 | 570 | 3/4" NPT | |
| HTS-80 | AA14L37 H0000 | 21.0 | 80 | 12 | 1 | 150 | 10 | 240 | 115 | 15.8 | 400 | 34.9 | 890 | 1" NPT | |
| HTS-100 | AA14L38 H0000 | 26.5 | 100 | 12 | 1 | 150 | 10 | 240 | 115 | 19.7 | 500 | 37.3 | 950 | 1" NPT | |
| HTS-140 | AA14L42 H0000 | 37.0 | 140 | 12 | 1 | 150 | 10 | 240 | 115 | 19.7 | 500 | 43.3 | 1100 | 1-1/4" NPT | |
| HTL-170 | AA34L45 H0000 | 44.0 | 170 | 12 | 1 | 150 | 10 | 240 | 115 | 19.7 | 500 | 48.7 | 1240 | 1-1/4" NPT | |
| HTL-200 | AA34L47 H0000 | 53.0 | 200 | 12 | 1 | 150 | 10 | 240 | 115 | 21.7 | 550 | 47.2 | 1200 | 1-1/4" NPT | |
| HTL-300 | AA34L51 H0000 | 80.0 | 300 | 12 | 1 | 150 | 10 | 240 | 115 | 25.6 | 650 | 49.0 | 1245 | 1-1/4" NPT | |
| HTL-400 | AA34L53 H0000 | 105.0 | 400 | 12 | 1 | 150 | 10 | 240 | 115 | 25.6 | 650 | 57.9 | 1470 | 1-1/4" NPT | |
| HTL-450 | AA44L54 H0000 | 120.0 | 450 | 12 | 1 | 150 | 10 | 240 | 115 | 29.5 | 750 | 54.7 | 1390 | 1-1/4" NPT | |
| HTL-500 | AA44L55 H0000 | 132.0 | 500 | 12 | 1 | 150 | 10 | 240 | 115 | 29.5 | 750 | 59.1 | 1500 | 1-1/4" NPT | |
| HTL-600 | AA44L57 H0000 | 160.0 | 600 | 12 | 1 | 150 | 10 | 240 | 115 | 25.6 | 650 | 87.8 | 2230 | 2" NPT | |
| HTL-800 | AA44L60 H0000 | 210.0 | 800 | 12 | 1 | 150 | 10 | 240 | 115 | 29.5 | 750 | 90.2 | 2290 | 2" NPT | |
| HTL-1000 | AA44L62 H0000 | 265.0 | 1000 | 12 | 1 | 150 | 10 | 240 | 115 | 31.5 | 800 | 90.2 | 2290 | 2" NPT | |
| HTL-1200 | AA44L64 H0000 | 320.0 | 1200 | 12 | 1 | 150 | 10 | 240 | 115 | 35.4 | 900 | 95.9 | 2435 | 2" NPT | |
| HTL-1400 | AA44L66 H0000 | 370.0 | 1400 | 12 | 1 | 150 | 10 | 240 | 115 | 37.4 | 950 | 97.6 | 2480 | 3" NPT | |
| HTL-1600 | AA44L68 H0000 | 420.0 | 1600 | 12 | 1 | 150 | 10 | 240 | 115 | 41.3 | 1050 | 98.4 | 2500 | 3" NPT | |
| HTL-2000 | AA44L70 H0000 | 530.0 | 2000 | 12 | 1 | 150 | 10 | 240 | 115 | 43.3 | 1100 | 107.1 | 2720 | 3" NPT | |
| HTL-3000 | AA44L74 H0000 | 790.0 | 3000 | 12 | 1 | 150 | 10 | 240 | 115 | 51.2 | 1300 | 113.0 | 2870 | 3" NPT | |
| HTL-4000 | AA44L77 H0000 | 1060.0 | 4000 | 12 | 1 | 150 | 10 | 240 | 115 | 61.0 | 1550 | 113.5 | 2885 | 3" NPT | |
| HTL-5000 | AA44L80 H0000 | 1320.0 | 5000 | 12 | 1 | 150 | 10 | 240 | 115 | 61.0 | 1550 | 123.2 | 3130 | 3" NPT | |

# WTL-2 - COLD WATER BOOSTER TANKS

## SANITARY BLADDER AUTOCLAVES FOR COLD WATER (200 PSI)




120 ÷ 210 gal.

### DIMENSIONS

| MODEL | CODE | | | Ppre | Ppre | Pmax | Pmax | | | | | | | DN1 | NOTES |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | gal. | L. | PSI | bar | PSI | bar | °F | °C | in. | mm | in. | mm | | |
| WTL2-450 | AA34P54 W0000 | 120.0 | 450 | 55 | 4 | 200 | 13,8 | 240 | 115 | 25.6 | 650 | 70.0 | 1780 | 2" NPT | |
| WTL2-500 | AA44P55 W0000 | 132.0 | 500 | 55 | 4 | 200 | 13,8 | 240 | 115 | 25.6 | 650 | 76.0 | 1930 | 2" NPT | |
| WTL2-680 | AA44P58 W0000 | 180.0 | 680 | 55 | 4 | 200 | 13,8 | 240 | 115 | 29.5 | 750 | 79.3 | 2015 | 2" NPT | |
| WTL2-800 | AA44P60 W0000 | 210.0 | 800 | 55 | 4 | 200 | 13,8 | 240 | 115 | 29.5 | 750 | 91.1 | 2315 | 2" NPT | |

U ASME U approved

UM ASME UM approved

For heating systems

For air conditioning systems

For drinking water

For pressurisation systems

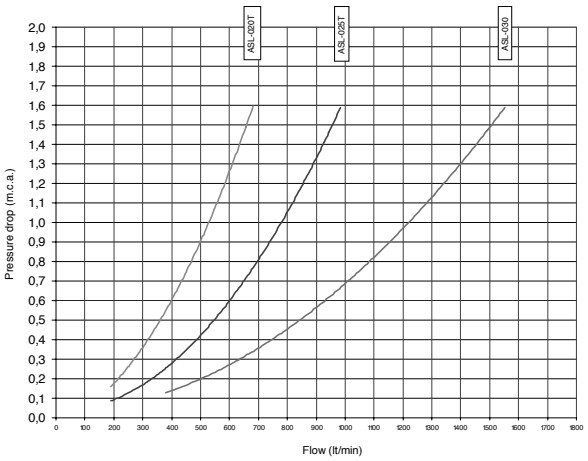
Well pressure tanks for use in hydropneumatic systems.

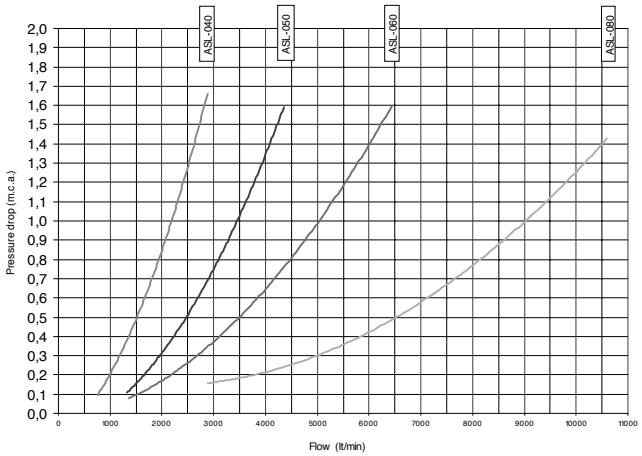
**WARRANTY: 2 YEARS**

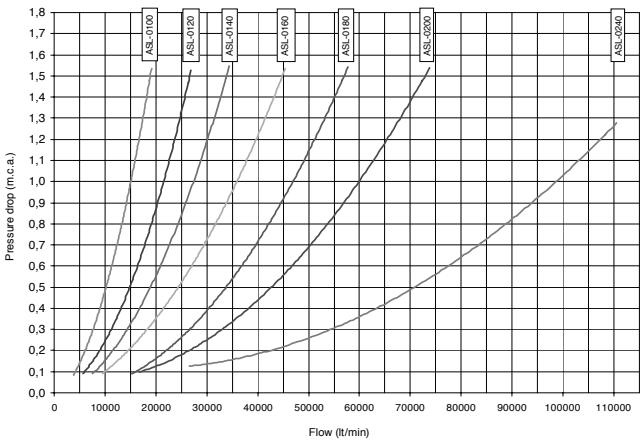
**Characteristics:**
- Working temperature: -10° / +115°C
- Solvent painted, grey
- Counter-flange with Top-Pro treatment

**Reference standard**
- ASME (American Society of Mechanical Engineers), stamp U

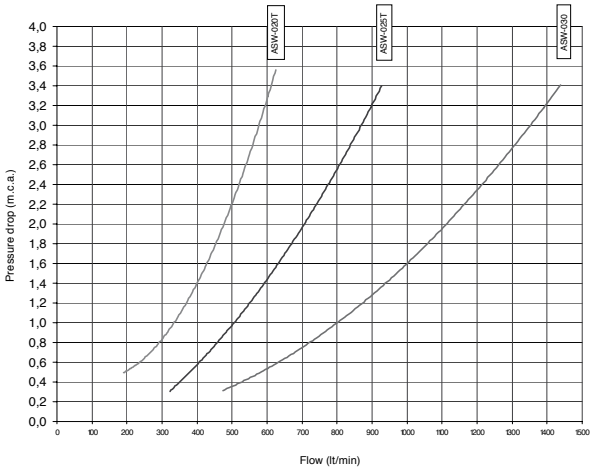
## ASL

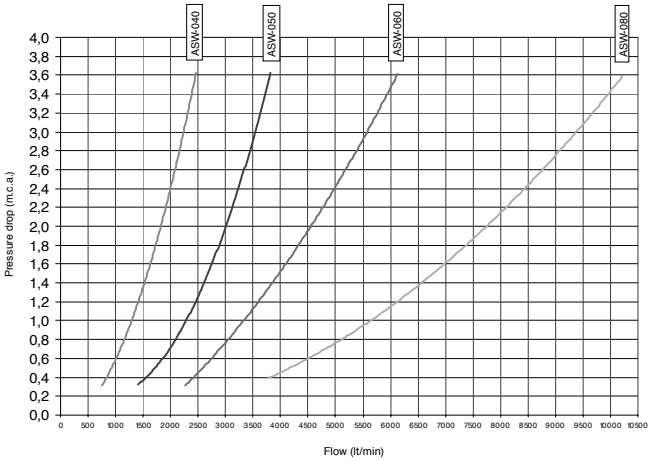

ASL-025T
ASL-025T
ASL-030
Pressure drop (m.c.a.)
Flow (lt/min)

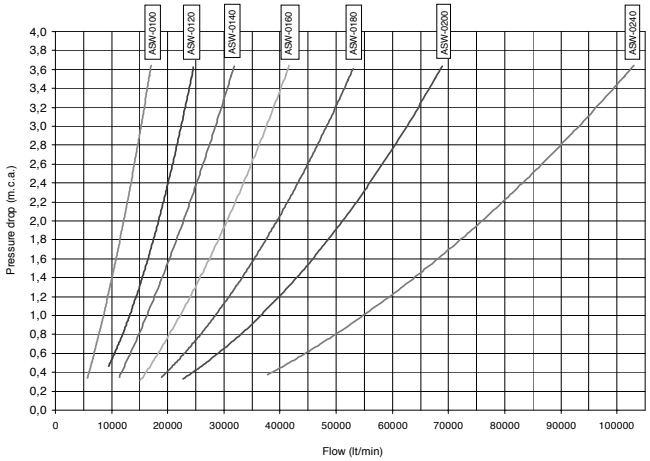

ASL-040
ASL-050
ASL-060
ASL-080
Pressure drop (m.c.a.)
Flow (lt/min)

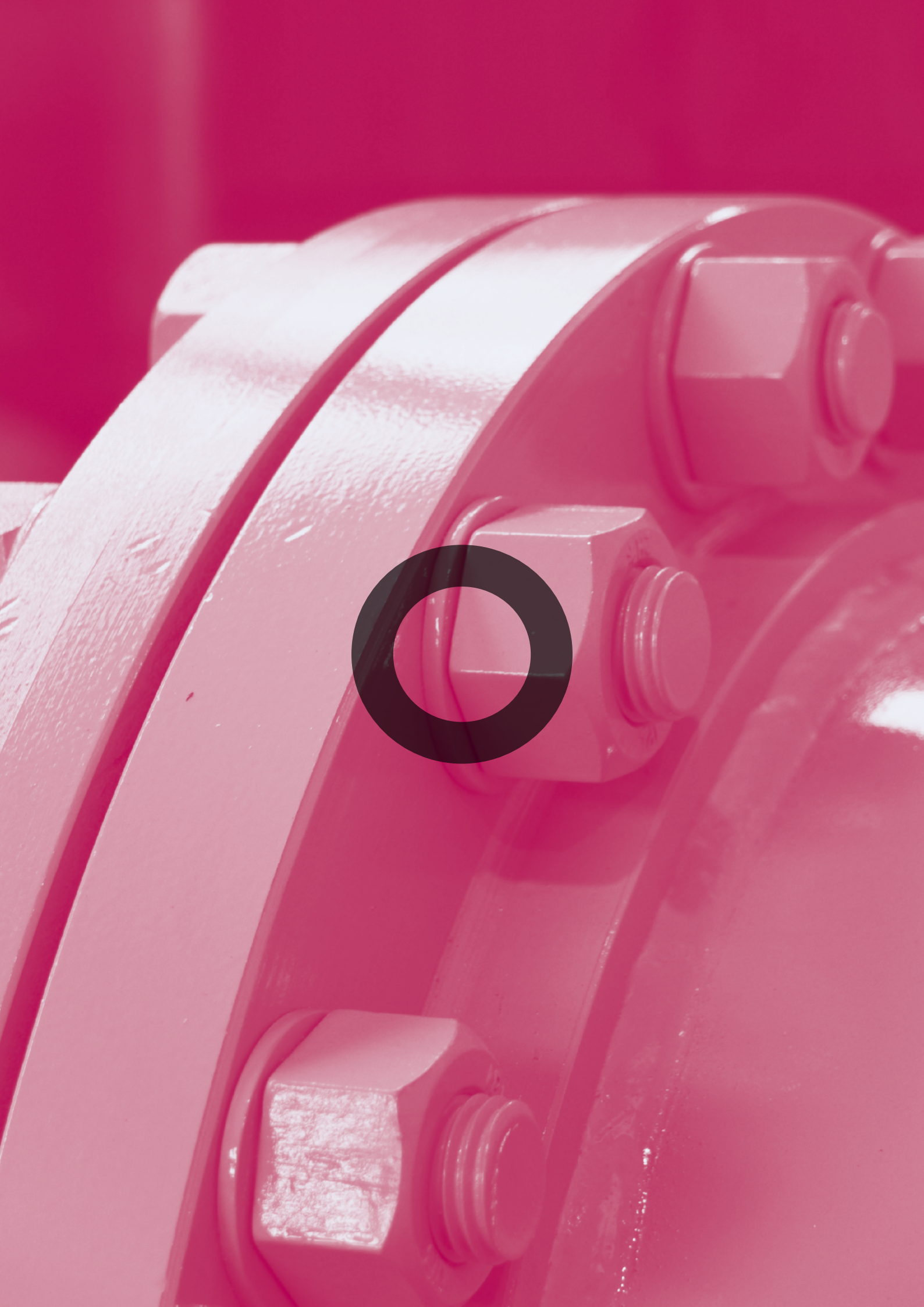

ASL-0100
ASL-0120
ASL-0140
ASL-0160
ASL-0180
ASL-0200
ASL-0240
Pressure drop (m.c.a.)
Flow (lt/min)

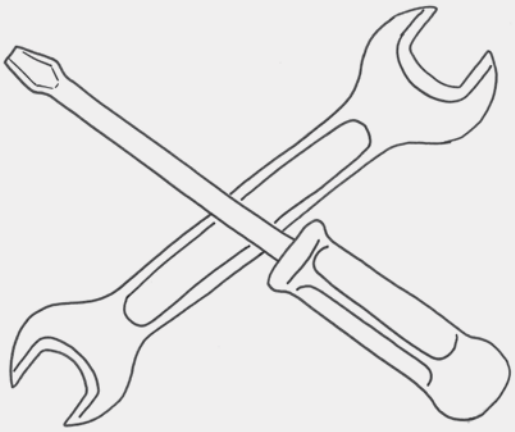
## ASW


ASW-025T
ASW-025T
ASW-030
Pressure drop (m.c.a.)
Flow (lt/min)


ASW-040
ASW-050
ASW-060
ASW-080
Pressure drop (m.c.a.)
Flow (lt/min)


ASW-0100
ASW-0120
ASW-0140
ASW-0160
ASW-0180
ASW-0200
ASW-0240
Pressure drop (m.c.a.)
Flow (lt/min)

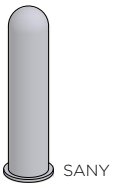




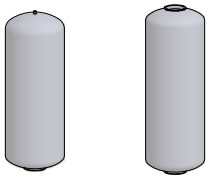
# ACCESSORIES AND SPARE PARTS

## CE BLADDERS

| USE | IN EPDM RUBBER Code | NOTES | IN BUTYL RUBBER Code | NOTES |
|---|---|---|---|---|
| SANY S 0.5/SANY S 1 | - | | Q110005 | |
| SANY S 2/SANY L 3 | - | | Q110007 | |
| AC-2 / HF-2F | - | | Q110008 | |
| SANY S 3/SANY S 4/SANY L 6 | - | | Q110009 | |
| AC-5 / AC-8 | Q120016 | | Q110016 | |
| HM-24/HS-24/AC-18/AC-25/AC-25 GPM/AF-24 | Q120024 | | Q110027 | |
| AS-25 | Q120027 | | Q110027 | |
| AC-20 PN-25/AF-35/AFV-50/AFH-50 | Q120034 | | Q110034 | |
| HM-60/AFV-60/AFH-60/AFV-80/AFH-80/ AFV-100/AFH-100 | Q120038 | | Q110038 | |
| AFV-150/AFV-200/AFH-200 | Q120047 | | Q110047 | |
| AFV-300/AFH-300 | Q120051 | | Q110051 | |
| AFV-500/ERL-300 DAC/ERL-500 DAC | Q120055 | | Q110055 | |


SANY

| USE | Code | NOTES | Production up to 12/2010 Code | NOTES |
|---|---|---|---|---|
| AF 500-16 | Q141055 01000 | | Q141055 | |
| DL 750/ERL-750 DAC/ERL-750*/AFL-750* | Q141059 01000 | | Q141059 | |
| DL-1000/ERL-1000 DAC/ERL-1000*/AFL-1000* | Q141062 01000 | | Q141062 | |
| DL-2000/ERL-2000*/AFL-2000* | Q140070 01000 | | Q140070 | |
| DL-3000/DL-5000/ERL-3000 DAC/ERL-5000 DAC/ERL-3000*/ERL-5000*/AFL-3000*/ AFL-5000* | Q140080 | | - | |

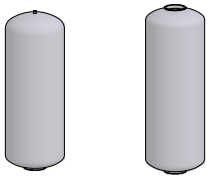


* Tanks out of production since 12/2010: PAY ATTENTION TO THE MANUFACTURING DATE BEFORE ORDERING THE BLADDER

## ASME BLADDERS

| USE | IN EPDM RUBBER Code | NOTES | IN BUTYL RUBBER Code | NOTES |
|---|---|---|---|---|
| ASME 8 | Q120027 | | Q110027 | |
| ASME 19/ASME 30/ASME 45 | Q120034 | | Q110034 | |
| ASME 80/ASME 100 | Q120038 | | Q110038 | |
| ASME 140 | Q120047 | | Q110047 | |
| ASME 170/ASME 200/ASME 300 | Q120051 | | Q110051 | |
| ASME 400/ASME 450/ASME 500 | Q120055 | | Q110055 | |

| USE | Code | NOTES | Production up to 12/2010 Code | NOTES |
|---|---|---|---|---|
| ASME 600/ASME 450-200/ASME 500-200 | Q141055 01000 | | Q141055 | |
| ASME 680-200 | Q141059 01000 | | Q141059 | |
| ASME 600/ASME -800/ASME-1000/ ASME-1200/ASME800-200 | Q141062 01000 | | Q141062 | |
| ASME 1400/ASME 1600/ASME-2000 | Q140070 01000 | | Q140070 | |
| ASME-3000/ASME-4000/ASME-5000 | Q140080 | | - | |



* Tanks out of production since 12/2010: PAY ATTENTION TO THE MANUFACTURING DATE BEFORE ORDERING THE BLADDER

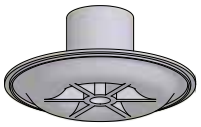
## BLADDER AUTOCLAVES

### COUNTER-FLANGE FOR AUTOCLAVES WITH REPLACEABLE BLADDER

| MATERIAL | USE | DIAM. Ø (MM) | WATER CONNECTION | CODE | NOTES |
|---|---|---|---|---|---|
| Galvanized steel | AC-2/5/8 | 95 | 3/4" | 3A09525 | |
| | AC-18/25; AS-25; AF-35-100 | 145 | 1" | 3A14536 | |
| | AF-150-500 | 274 | 1.1/4" | 3A27448 | |
| Stainless steel | AC-2/5/8; HX-2F | 95 | 3/4" | 3E08623 | |
| | AC-18/25; AS-25; AF-35-100 | 145 | 1" | 3E14835 | |
| | HM-24/60; HS-24 | 145 | 1" | 3E14835 | |
| Top-Pro steel | DL-750/1000; AFV-500 16 bar | 260 | 2" | 3A2586F | |
| Glasslined steel | DL-2000/3000/5000 | 410 | 3" | 3A411ZL | |

### NYLON PROTECTIONS FOR COUNTER-FLANGE

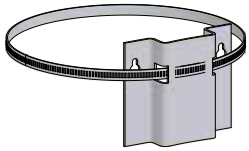
| ITEM | CODE | NOTES |
|---|---|---|
| Protection for counter-flange diam. ø 95 mm. and connection 3/4” | 7082000 | |
| Protection for counter-flange diam. ø 145 mm. and connection 1” | 7082020 | |
| Protection for counter-flange diam. ø 274 mm. and connection 1/4” | 7082030 | |



## EXPANSION TANKS FOR HEATING

### WALL FIXING BRACKET FOR ER – ERCE SERIES

| ITEM | CODE | NOTES |
|---|---|---|
| Wall fixing bracket for ER-5/18 | 8200225 | |
| Wall fixing bracket for ER-24 | 8200235 | |
| Wall fixing bracket for ERCE-35 | 8200245 | |



## PLASTO – POLYETHYLENE TANKS

### LIDS FOR PLASTO TANKS

| CODE | ITEM | DIAM. Ø | NOTES |
|---|---|---|---|
| 7081060 | Lids with vent | 255 | |
| 7081070 | Lids with vent | 355 | |
| 7081080 | Lids with vent | 455 | |
| 7081100 | Lid for CU 3.000 – 5.000 | 500 | |
| A5G1092 | Lid for CU 10.000 | 700 | |
| Q220050 | Lid for CV 10.000 – 13.000 | 610 | |
| A5G0055 | Lid for JAR | 400 | |

Lids with vent

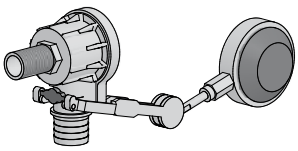
Lid for CU
3.000 – 5.000

Lid for CU
10.000

Lid for CV
10.000 – 13.000

### HYDRAULIC LEVEL REGULATORS WITH INSTANT “QUICKSTOP” CLOSURE

| CODE | ITEM | CONNECTION | NOTES |
|---|---|---|---|
| 8001100 | PLUS Regulator | 3/4” | |
| 8001110 | PLUS Regulator | 1” | |
| 8001120 | PLUS Regulator | 1 - 1/4” | |
| 8001130 | PLUS Regulator | 1 - 1/2” | |
| 8001100 V0010 | BASIC Regulator | 3/4” | |
| 8001110 V0010 | BASIC Regulator | 1” | |
| 8001120 V0010 | BASIC Regulator | 1 - 1/4” | |
| 8001130 V0010 | BASIC Regulator | 1 - 1/2” | |



PLUS MODEL

### WATER JOINTS KIT FOR PLASTO TANKS

| CODE | CONNECTION | NOTES |
|---|---|---|
| 8200180 | 2x1”+3/4” | |
| 8200190 | 2x 1”1/4+3/4” | |
| 8200200 | 2x1”1/2+3/4” | |
| 8200210 | 2x2”+3/4” | |

### EXTENSIONS / FILTER FOR PLASTO TANK

| CODE | MODEL | NOTES |
|---|---|---|
| A5G0062 | Extension opening Ø 300 for CHU 1.000 | |
| A5G0070 | Extension opening Ø 400 for CHU 2.000 | |
| 7081200 | Extension opening Ø 500 for CU 3.000 - 5.000 | |
| A5G0092 | Extension opening Ø 700 for CU 10.000 | |
| L310000 | ELBI filter for rainwater Ø 100 | |

EXTENSION
FOR CHU

EXTENSION
FOR CU

RAINWATER
FILTER

## ACCESSORIES / SPART PARTS FOR WASTEWATER SYSTEMS

| CODE | DESCRIPTION | NOTES |
|---|---|---|
| F5NS006 | Sedimentation tank Imhoff-6 / OIL 6/9/12 | |
| F5ND006 | Digester Imhofff-6 / ST 6 / DG-PRO 45 / OIL 6 | |
| F5NS009 | Sedimentation tank Imhoff-9 | |
| F5ND009 | Digester Imhoff-9 / ST 9 / DG-PRO 60 / OIL 9 | |
| F5NS012 | Sedimentation tank Imhoff-12 | |
| F5ND012 | Digester Imhoff-12 / ST 12 / DG-PRO 75 / OIL 12 | |
| F5NS015 | Sedimentation tank Imhoff-15 / OIL 15/18/25 | |
| F5ND015 | Digester Imhoff-15 / ST 15 / DG-PRO 110 / OIL 15 | |
| F5NS018 | Sedimentation tank Imhoff-18 | |
| F5ND018 | Digester Imhoff-18 / ST 18 / DG-PRO 140 / OIL 18 | |
| F5NS025 | Sedimentation tank Imhoff-25 | |
| F5ND025 | Digester Imhoff-25 / ST 25 / DG-PRO 170 / OIL 25 | |
| F5NS035 | Sedimentation tank Imhoff-35 | |
| F5ND035 | Digester Imhoff-35 / ST 35 / DG-PRO 240 / OIL 35 | |
| F5NS050 | Sedimentation tank Imhoff-50 / OIL 35/50 | |
| F5ND050 | Digester Imhoff-50 / ST 50 / DG-PRO 350 / OIL 50 | |
| Q220005 | Lid Imhoff for sludge sampling 6” | |
| Q220030 | Lid Imhoff for inspection Ø 400 | |
| F5OC012 | Lid ST 6-9-12 / DG-PRO 45-60-75 | |
| F5OC025 | Lid ST 15-18-25 / DG-PRO 110-140-170 | |
| F5OC050 | Lid ST 35-50 / DG-PRO 240-350 | |

SEDIMENTATION TANK

DIGESTER

6” LID FOR SLUDGE SAMPLING

INSPECTION LID DIAM. 400

## SEALS FOR PIPE CONNECTION

| CODE | DESCRIPTION | NOTES |
|---|---|---|
| L390110 | Seal diam. 110 | |
| L390125 | Seal diam. 125 | |
| L390160 | Seal diam. 160 | |

## LINEAR DIAPHRAGM BLOWERS FOR ACTIVATED SLUDGE SYSTEMS

| CODE | VOLTAGE [V] | AMPERE [A] | FREQUENCY [Hz] | POWER [W] | RATED PRESSURE [mbar] | AIR FLOW [lt/min] | NOISE LEVEL [dbA] | NOTES |
|---|---|---|---|---|---|---|---|---|
| L390025 | 220 | 0,60 | 50 | 64 | 150 | 70 | < 48 | |
| L390030 | 220 | 0,96 | 50 | 106 | 180 | 100 | < 50 | |
| L390035 | 220 | 0,94 | 50 | 110 | 200 | 120 | < 46 | |
| L390040 | 220 | 1,20 | 50 | 170 | 200 | 150 | < 48 | |
| L390045 | 220 | 1,75 | 50 | 230 | 200 | 200 | < 48 | |

## FINE BUBBLE DIAPHRAGM AIR DIFFUSER

| CODE | CONNECTION | DIAM. Ø [mm] | WEIGHT [kg] | BUBBLES DIAM. Ø [mm] | AIR FLOW [m³/h] | NOTES |
|---|---|---|---|---|---|---|
| L390020 | 1/2” GAS | 215 | 2,1 | 1 ÷ 3 | 5 | |

## PLASTIC MEDIA

| CODE | SHAPE | DIAM. Ø [mm] | SPECIFIC SURFACE [m2 / m3] | VOIDAGE % | MATERIAL | NOTES |
|---|---|---|---|---|---|---|
| L390005 | SPHERICAL | 70 | 140 | 95 | ISOTACTIC POLYPROPYLENE | |
| L390010 | CIRCULAR | 170 | 120 | 95 | ISOTACTIC POLYPROPYLENE | |

## SAFETY VALVES

| CODE | MODEL | CALIBRATION (BAR) | CAPACITY AIR LITRES / MIN. | CAPACITY WATER LITRES / MIN. | CONNECTION | HEIGHT (MM) | NOTES |
|---|---|---|---|---|---|---|---|
| L17CH00 | C-10/6 | 6 | 4.668 | 59 | | | |
| L17CJ00 | C-10/8 | 8 | 6.019 | 68 | | | |
| L17CL00 | C-10/10 | 10 | 7.370 | 76 | 3/8" | 65 | |
| L17CN00 | C-10/12 | 12 | 8.721 | 83 | | | |
| L17CH00 | C-10/16 | 16 | 11.424 | 96 | | | |
| L17GH00 | B-20/6 | 6 | 21.647 | 234 | | | |
| L17GJ00 | B-20/8 | 8 | 27.914 | 270 | | | |
| L17GL00 | B-20/10 | 10 | 34.180 | 302 | 1" | 145 | |
| L17GN00 | B-20/12 | 12 | 40.447 | 331 | | | |
| L17GH00 | B-20/16 | 16 | 52.979 | 382 | | | |
| L17HH00 | F-25/6 | 6 | 36.359 | 366 | | | |
| L17HJ00 | F-25/8 | 8 | 46.884 | 422 | | | |
| L17HL00 | F-25/10 | 10 | 57.409 | 472 | 1.1/4" | 215 | |
| L17HN00 | F-25/12 | 12 | 67.934 | 517 | | | |
| L17HH00 | F-25/16 | 16 | 88.984 | 597 | | | |
| L17KH00 | F-40/6 | 6 | 74.684 | 937 | | | |
| L17KJ00 | F-40/8 | 8 | 96.303 | 1.081 | | | |
| L17KL00 | F-40/10 | 10 | 117.922 | 1.209 | 2" | 290 | |
| L17KN00 | F-40/12 | 12 | 139.541 | 1.325 | | | |
| L17KH00 | F-40/16 | 16 | 182.866 | 1.530 | | | |

CE tested and approved safety valves supplied on demand.

## GALVANIZED TANKS

### INCREASES FOR SPECIAL INSTALLATIONS

| INSPECTION OPENINGS | CODE | AVAILABLE ON: | NOTES |
|---|---|---|---|
| Handhole 100x150 | 8000420 | Lt. 1.500 -10.000 | |
| Manhole 300x400 | 8000580 | Lt. 3.000 -10.000 | |

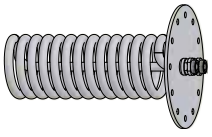
### GAUGES

| ITEM | CALIBRATION (BAR) | CODE | NOTES |
|---|---|---|---|
| Gauge EN 837-1 | 6 | L11BH00 | |
| | 8 | L11BJ00 | |
| | 10 | L11BL00 | |
| | 12 | L11BN00 | |
| | 16 | L11BR00 | |

## HOT WATER TANKS

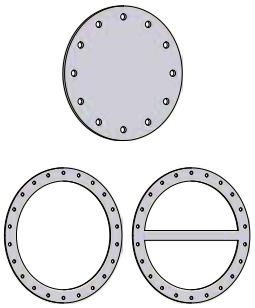
### COIL EXCHANGERS IN FINNED COPPER FOR BG SERIES TANKS

| CODE | MODEL | SURF. M² | NOTES |
|---|---|---|---|
| 2140180 | SC-180 | 1,8 | |
| 2140250 | SC-250 | 2,5 | |
| 2140320 | SC-320 | 3,2 | |
| 2140450 | SC-450 | 4,5 | |



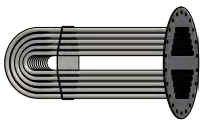
## ACCESSORIES FOR BG SERIES CYLINDERS

| CODE | MODEL | NOTES |
|---|---|---|
| 3A310XD | GLASSLINED COUNTER-FLANGE Ø 310 | |
| 4203050 | GASKET FOR FINNED COPPER COIL "SC" TYPE | |
| 8000130 | COMPLETE THERMOMETER 0° - 120°C, DN 1/2" | |
| 8000140 | THERMOSTAT | |



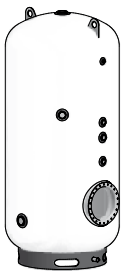
## STAINLESS STEEL HEAT EXCHANGERS

| CODE | MODEL | | NOTES |
|---|---|---|---|
| 2980040 | Stainless steel heat exchanger 0.40 m² for 100 litre cylinders | Horizontal, Ø 260 – 6 Holes | |
| 2980060 | Stainless steel heat exchanger 0.60 m² for 150 litre cylinders | | |
| 2980079 | Stainless steel heat exchanger 0.79 m² for 200 litre cylinders | | |
| 2980090 | Stainless steel heat exchanger 0.90 m² for 300 litre cylinders | | |
| 2980125 | Stainless steel heat exchanger 1.25 m² for 500 litre cylinders | | |
| 2950075 | Stainless steel heat exchanger 0.75 m² for 300 litre cylinders | Vertical, Ø 330 - 15 Holes | |
| 2950100 | Stainless steel heat exchanger 1.00 m² for 500 litre cylinders | | |
| 2950150 | Stainless steel heat exchanger 1.60 m² for 750 litre cylinders | | |
| 2960250 | Stainless steel heat exchanger 2.50 m² for 1000 litre cylinders | | |
| 2950300 V0010 | Stainless steel heat exchanger 3.00 m² for 1500 litre cylinders | Vertical, Ø 420 - 22 Holes | |
| 2950400 V0010 | Stainless steel heat exchanger 4.00 m² for 2000 litre cylinders | | |
| 2960500 V0010 | Stainless steel heat exchanger 5.00 m² for 2500 litre cylinders | | |
| 2960600 V0010 | Stainless steel heat exchanger 6.00 m² for 3000 litre cylinders | | |
| 2950800 V0010 | Stainless steel heat exchanger 8.00 m² for 4000 litre cylinders | | |
| 2961000 V0010 | Stainless steel heat exchanger 10.00 m² for 5000 litre cylinders | | |



## BF1 SERIES GLASSLINED CASING CYLINDER – COATED

| CODE | MODEL | NOTES |
|---|---|---|
| F340H67 00050 | BF-1 1500 | |
| F340H70 00050 | BF-1 2000 | |
| F340H74 00050 | BF-1 3000 | |
| F340H80 00050 | BF-1 5000 | |

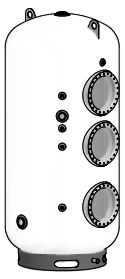


## BF2 SERIES GLASSLINED CASING CYLINDER – COATED

| CODE | MODEL | NOTES |
|---|---|---|
| F370H67 00050 | BF-2 1500 | |
| F370H70 00050 | BF-2 2000 | |
| F370H74 00050 | BF-2 3000 | |
| F370H80 00050 | BF-2 5000 | |

## BF3 SERIES GLASSLINED CASING CYLINDER – COATED

| CODE | MODEL | NOTES |
|---|---|---|
| F380H67 00050 | BF-3 1500 | |
| F380H70 00050 | BF-3 2000 | |
| F380H74 00050 | BF-3 3000 | |
| F380H80 00050 | BF-3 5000 | |



## HEATING ELEMENTS WITHOUT THERMOSTAT – REINFORCED ELECTRICAL HEATERS

| MODEL | CONNECTION | CODE | NOTES |
|---|---|---|---|
| MF 1KW/220V LENGTH 295 | 1“ 1/4 | 8601000 | |
| MF 1,65KW/220V LENGTH 450 | 1“ 1/4 | 8601650 | |
| MF 2KW/220V LENGTH 515 | 1“ 1/4 | 8602000 | |
| MF 2,6KW/220V LENGTH 675 | 1“ 1/4 | 8602600 | |
| MF 2,6KW/220V LENGTH 360 | 1“ 1/4 | 8602601 | |
| MF 3,3KW/220V LENGTH 825 | 1“ 1/4 | 8603300 | |
| MF 3,3KW/220V LENGTH 435 | 1“ 1/4 | 8603301 | |
| MF 4KW/220V LENGTH 510 | 1“ 1/4 | 8604001 | |
| TF 5KW/380V LENGTH 445 | 1“ 1/2 | 8705000 | |
| TF 6KW/380V LENGTH 510 | 1“ 1/2 | 8706000 | |
| TF 8KW/380V LENGTH 670 | 1“ 1/2 | 8708000 | |
| TF 10KW/380V LENGTH 820 | 1“ 1/2 | 8710000 | |
| TF 12KW/380V LENGTH 970 | 1“ 1/2 | 8712000 | |

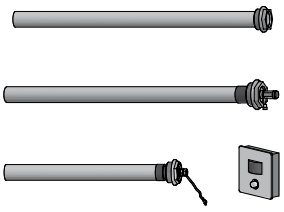
MF = Mono-phase; TF = Three-phase

## HEATING ELEMENTS WITH THERMOSTAT – REINFORCED ELECTRICAL HEATERS

| MODEL | | CONNECTION | CODE | NOTES |
|---|---|---|---|---|
| RES.MONOP. + THERMOSTAT 1,5KW/230V | LENGTH 320 | 1“ 1/2 | 8T01500 | |
| RES.MONOP. + THERMOSTAT 2,0KW/230V | LENGTH 320 | 1“ 1/2 | 8T02000 | |
| RES.MONOP. + THERMOSTAT 2,2KW/230V | LENGTH 320 | 1“ 1/2 | 8T02200 | |
| RES.MONOP. + THERMOSTAT 2,5KW/230V | LENGTH 320 | 1“ 1/2 | 8T02500 | |
| RES.MONOP. + THERMOSTAT 3,0KW/230V | LENGTH 320 | 1“ 1/2 | 8T03000 | |
| RES.THREEP. + THERMOSTAT 4,0KW/400V | LENGTH 400 | 1“ 1/2 | 8T04000 | |
| RES.THREEP. + THERMOSTAT 5,0KW/400V | LENGTH 500 | 1“ 1/2 | 8T05000 | |
| RES.THREEP. + THERMOSTAT 6,0KW/400V | LENGTH 600 | 1“ 1/2 | 8T06000 | |
| RES.THREEP. + THERMOSTAT 9,0KW/400V | LENGTH 700 | 1“ 1/2 | 8T09000 | |
| RES.THREEP. + THERMOSTAT 12,0KW/400V | LENGTH 850 | 1“ 1/2 | 8T12000 | |

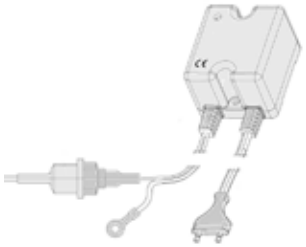
## MAGNESIUM ANODE

| Model | Code | NOTES |
|---|---|---|
| DIAM.32 x 150 | 8560000 | |
| DIAM.32 x 200 | 8560010 | |
| DIAM.32 x 250 | 8560020 | |
| DIAM.32 x 320 | 8560040 | |
| DIA M.32 x 410 | 8560050 | |
| DIAM.32 x 520 | 8560060 | |
| DIAM.32 x 670 | 8560070 | |
| DIAM.32 x 700 | 8560080 | |
| DIAM.40 x 640 | 8560100 | |
| 32x350-1” 1/2 WITH SIMPLETEST | 8560045 | |
| 32x550-1” 1/2 WITH SIMPLETEST | 8560065 | |
| 32x350-1” 1/4 | 8560046 | |
| 32x550-1” 1/4 | 8560066 | |
| 32x700-1” 1/4 | 8560086 | |



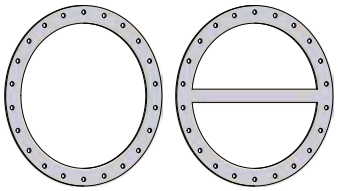
## CATHODIC PROTECTIONS

| Model | Code | NOTES |
|---|---|---|
| CATHODIC PROT. 550/150 L700/ 100 - 400 L | 8560170 | |
| CATHODIC PROT. 550/200 L750/ 500 - 1000 L | 8560175 | |
| CATHODIC PROT. 400/200 L600/ 1500 - 2500 L | 8560180 | |
| CATHODIC PROT. 450/250 L700/ 3000 - 5000 L | 8560185 | |



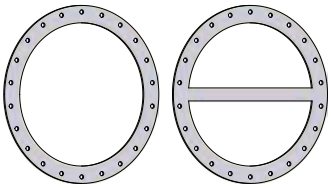
## GASKETS

| Model | Code | NOTES |
|---|---|---|
| Gasket SBR Ø 240X320X4 15F S.T. | 4203300 | |
| Gasket SBR Ø 240X320X4 15F C.T. | 4213300 | |
| Gasket SBR Ø 330X410X4 22F D11 S.T. | 4204200 V0020 | |
| Gasket SBR Ø 330X410X4 22F D11 C.T. | 4214200 V0020 | |



## GASKETS FOR HIGH TEMPERATURES

| Code | Model | NOTES |
|---|---|---|
| Gasket 240X320X4 15F S.T. | 4203305 | |
| Gasket 240X320X4 15F C.T. | 4213305 | |
| Gasket 330X410X4 22F Ø 11 S.T. | 4204205 V0010 | |
| Gasket 330X410X4 22F Ø 11 C.T. | 4214205 V0010 | |




## STAINLESS STEEL HEAT EXCHANGER HEADS

| Code | Model | NOTES |
|---|---|---|
| Head Ø 330 15 HOLES Ø 14 1"1/4 | 3873304 | |
| Head Ø 420 22 HOLES Ø 11 1"1/2 | 3874205 V0010 | |

**1. Preamble**
These general conditions, unless otherwise agreed in writing, regulate all current and future sale agreements between the Parties.

**2. Offers**
2.1. The Buyer declares to grant and accept all measures concerning weight, surface, shape, size and, at any rate, all the technical specifications included by Elbi in its published documents.
2.2. Elbi reserves the right to make all changes without fore-notice it should arbitrarily deem necessary to enhance the product, as also to cease production of any model, excluding any right of the Buyer to demand compensation under any form.
2.3. The documentation enclosed to offers by Elbi is exclusively reserved to the Buyer, with the explicit prohibition to make it accessible, even partly, to third parties without due authorisation in writing by Elbi.

**3. Orders**
3.1 Every order submitted by the Customer is understood as accepted by Elbi only once it issues a Confirmation of Order.
Submitted orders are legally binding for the Customer and cannot be changed or cancelled without consent in writing (including by fax or e-mail) by Elbi or with execution of the modified order.
3.2. If the Customer drafts an order in name and on behalf of third parties from whom it has received mandate to file orders, by signing the order it agrees to fully comply with the agreed terms.
3.3. Orders received by representatives of Elbi are not binding until they are accepted in writing (including by fax) by the latter, or rather, until their formal execution.
3.4. Elbi reserves the right to cancel an order if its execution is not feasible or is unreasonably costly due to an unpredictable impediment that is independent of its will.

**4. Prices**
4.1. Prices are ex-works, unless otherwise agreed in writing by the parties, and are expressed in euros. VAT is not included in the prices and will be invoiced separately based on the tax rate applicable on the date of invoice.

**5. Delivery**
5.1. Delivery terms are purely indicative. In no case will a delivery delay entitle the Customer to request compensation and/or entail cancellation of the order. Any right to compensation of damages is at any rate limited to the contract value.
5.2. If deliveries are delayed because of force majeure, the delivery date will be extended by the duration of the event that caused the delay.
5.3. If an established delivery date is deferred by the Customer, Elbi will be entitled to demand payment of the amount of the available goods, or rather, to further delay their delivery.

**6. Shipment and transfer of risk**
6.1. Procedure for shipment is decided by Elbi, unless otherwise agreed.
6.1. If packing is not included, it is invoiced at price of cost. Elbi does not accept returned packages.
6.3. For deliveries worth less than 1.000 euros (and for Sicily and Sardinia only, worth less than 1,500 euros), a surcharge of 5% will be applied, with a minimum contribution of 40.00 euros for transport expenses.
6.4. For deliveries to construction sites, a fixed contribution of 5% will be applied for transport expenses.

**7. Returned goods**
7.1. Goods can only be returned if Elbi grants authorisation in writing,
7.2. If the parties agree to return goods, Elbi will charge the Customer administrative fees of 30% of the invoiced amount. Elbi also reserves the right to charge further value reductions on returned goods.
7.3. Elbi will not accept goods returned 3 (three) months after their delivery.

**8. Payment terms**
8.1. Unless otherwise agreed in writing by the parties, payments must be made to Elbi in Limena (PD), Via Buccia 9.
8.2. All payments must be made by the due date indicated in the invoice.
8.3. The Customer cannot compensate its debt for supplied goods with any credits that Elbi has not acknowledged or has contested, and cannot suspend payments, in part or in full.
8.4. If the Customer makes a payment after the due date in invoice, Elbi will be entitled to issue a Bank Order and invoice for any arrears, which will be charged ex art. 5. of Legislative Decree no. 231/2002. The above without prejudice in any case to Elbi's right to take legal action in order to receive compensation of the greater damage. Issuance of a Bank Order entails the surcharge of stamp duty and any accessory bank fees. Interest will be due without the need to issue a formal notice of default.
8.5. Failure to comply with the payment terms applicable to a supply by the Customer will entitle Elbi to immediately demand payment of all pending amounts, with automatic expiry of the agreed term.

**9. Suspension of a supply**
9.1. Failure to pay an invoice or its delayed payment will entitle Elbi to suspend any pending deliveries until it receives payment of its credit.

**10. Warranty**
10.1. Elbi will deliver to the Customer goods compliant with the legislation applicable in Italy. The Customer agrees to accept goods that are compliant with the laws in the Country to which they are delivered and will promptly inform Elbi (at any rate prior to shipment) of any changes it wants made to the goods and/or packing.

**11. Retained ownership**
11.1. Upon delivery, the Customer must immediately inspect the goods.
11.2. Any claims must be submitted in writing to Elbi within 8 days from receipt of the goods or, in the event of concealed flaws, within 8 days from their discovery and by and no later than one year from their delivery. Replacement of the goods does not mean that Elbi accepts the claim.
Claims regarding quantity (no. of items) and packing conditions must be reported on the transport document upon delivery, or (if otherwise, the claim will be void) within 2 (two) business days following delivery of the goods.
11.3. Elbi agrees to solve any manufacturing flaw, poor quality standard or non-conformity of the products that are attributable to its production, and that occurred within 12 days from the date the Products were delivered, provided it is promptly informed thereof, in accordance with point 2 of this clause.
11.4. Except for negligence or severe misconduct, Elbi will be required (whichever it chooses) to either:
a) supply products to the Customer of the same kind and quality as those found to display flaws, or that are not compliant with agreed terms; Elbi can in such case demand, at the expense of the Customer, to have the faulty products returned, over which it will have ownership;
b) repair the flawed product at its expense or modify the product that is not compliant with the terms agreed in order;
c) refund the Customer the price paid for the non-compliant products upon their return.
The warranty herein encompasses and replaces any other warranties on flawed or non-compliant products and excludes any other liability on Elbi's part for supplied products; more specifically, the Customer cannot submit any other claim for damages, request a discount or termination of the contract. Once the warranty term is over, the Customer will not be entitled to submit any claim against Elbi.
11.5. Any repair and service performed under warranty will be subordinate to the Buyer processing payment for the goods.
11.6. The warranty is at any rate confined and limited to the exact correspondence of the supplied product to the one ordered in writing. It is the Customer's exclusive responsibility to solve any problems tied to assembly, adaptation to the intended use of the product and natural wear. The warranty moreover excludes any product part or accessory directly manufactured by the Customer or third parties.

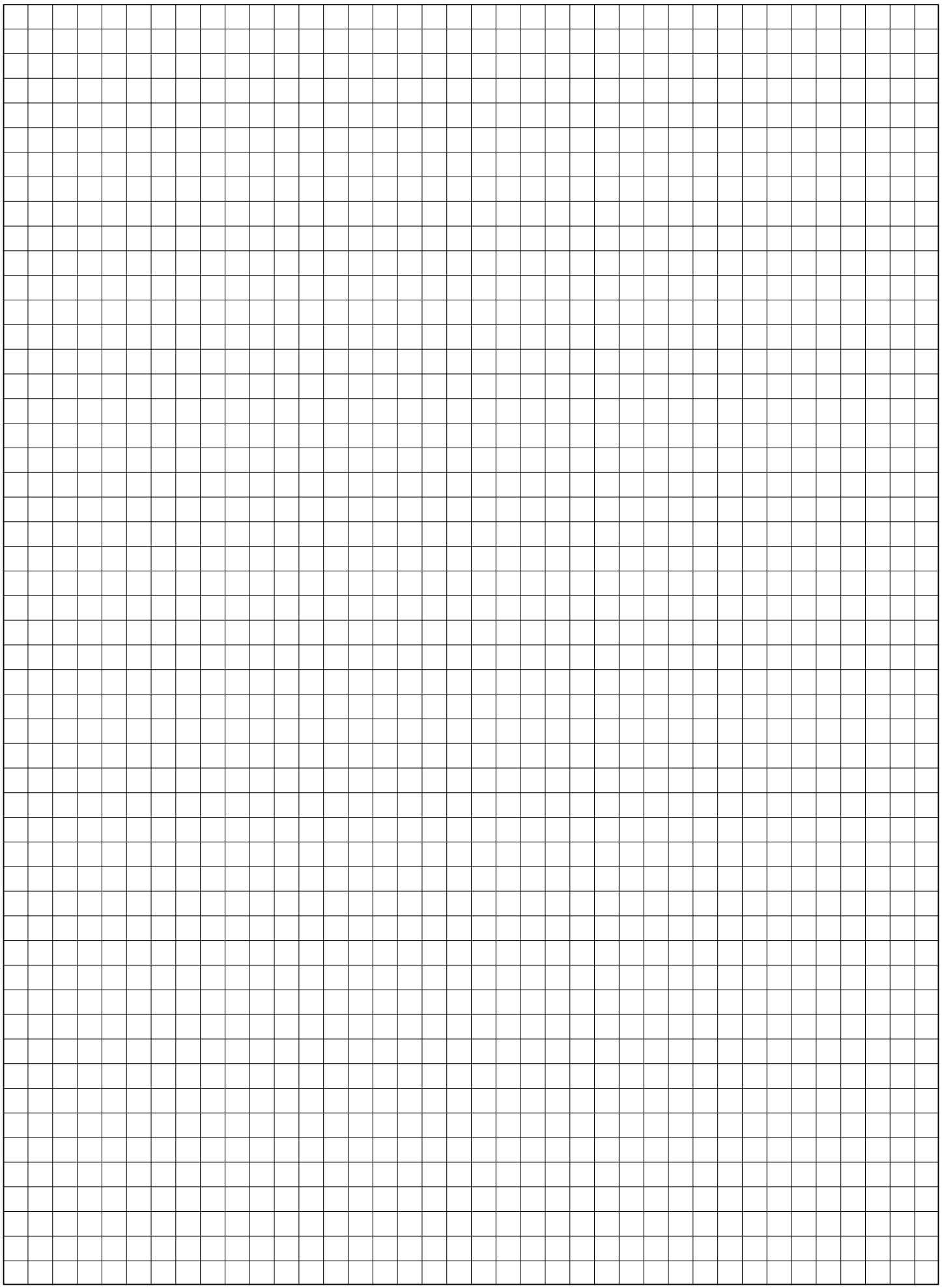
**12. Express termination clause**
12.1. Goods delivered to the Customer remain property of Elbi until their invoiced price is paid in full.
12.2. For as long as Elbi retains ownership over the goods, the Buyer cannot without prior consent in writing by Elbi pawn or sell the supplied goods to third parties.

**13. Safeguard clause**
13.1 If any clause of these General Conditions of Sale proves ineffective or void, in part or in full, the other clauses of the Conditions will continue to be enforceable and applicable.
The contractual parties agree to replace the void or ineffective clause with another one that will ensure that the economic scope originally intended for these Conditions can be legally pursued.

**14. Applicable law and Competent Court**
14.1. All agreements regulated by these General Conditions of Sale are, for all matters not pertaining to Italian law, regulated by the Vienna Convention of 1980. Any dispute that may arise between the parties will be settled by the sole competent Court of Padua, all other concurring or alternative Courts excluded.

**15. Correspondence**
15.1. Any correspondence and/or order submitted to Elbi must be submitted to the following address (or will otherwise be void): via Buccia 9, Limena (PD) – IT; Tel +39/049/8840677 Fax +39/049/8841610 e-mail: info@elbi.it

Pursuant to and by effect of art. 1341 of the Civil Code, the Buyer declares to have carefully read the above clauses under points 2) Offers; 3) Orders; 4) Prices; 5) Delivery; 6) Shipment and transfer of risk; 7) Returned goods; 8) Payment terms; 9) Suspension of a supply; 10) Warranty; 11) Retained ownership; 12) Express termination clause; 13) Safeguard clause; 14) Applicable law - Competent Court; 15) Correspondence.



FERMO RESTANDO LE CARATTERISTICHE BASILARI DEL PRODOTTO, LA SOCIETÀ SI RISERVA DI APPORTARE MODIFICHE IN OGNI MOMENTO AL SOLO SCOPO DI MIGLIORAMENTO.
*WHILE THE BASIC FEATURES OF THE PRODUCT WILL REMAIN UNCHANGED, THE COMPANY RESERVES THE RIGHT TO MAKE ANY IMPROVEMENTS TO ITS PRODUCTS WITHOUT NEED FOR PRIOR NOTICE.*

I COLORI RIPRODOTTI NEI CATALOGHI SONO INDICATIVI.
*THE COLOURS SHOWN IN THE CATALOGUE ARE AN INDICATION ONLY.*



PRINT February 2014

# LEGEND OF HYDRAULIC SYMBOLS


SAFETY VALVE


DRAIN


SHUT-OFF VALVE


PRESSURE REDUCER


CHECK VALVE


MIXER


VENT VALVE

SOLAR COLLECTOR TEMPERATURE PROBE

TEMPERATURE PROBE


ADJUSTMENT ELECTRONIC CONTROL UNIT


CIRCULATOR


THERMOMETER


GAUGE

ACS/DHV SANITARY HOT WATER

KW SANITARY COLD WATER

RC SANITARY WATER RECIRCULATION

HV DELIVERY FROM BOILER

HR RETURN TO BOILER

SV DELIVERY FROM SOLAR COLLECTOR

SR RETURN TO SOLAR COLLECTOR

MI DELIVERY TO SYSTEM

RI RETURN FROM SYSTEM

MP DELIVERY TO FLOOR SYSTEM — ONLY COMBI QUICK PUFFER PLUS

RP RETURN TO FLOOR SYSTEM — ONLY COMBI QUICK PUFFER PLUS

Vs SANITARY CYLINDER VOLUME — ONLY COMBI

Vr THERMO-ACCUMULATOR VOLUME — ONLY COMBI

AV DELIVERY TO ALTERNATIVE SOURCE — ONLY COMBI QUICK

AR RETURN TO ALTERNATIVE SOURCE — ONLY COMBI QUICK

Ss SANITARY HEAT EXCHANGER — ONLY COMBI QUICK

Sa HEAT EXCHANGER FOR ALTERNATIVE SOURCE — ONLY COMBI QUICK

Ssol SOLAR HEAT EXCHANGER

1 ELBI CYLINDER/ACCUMULATOR

2 D/DV SERIES SANITARY EXPANSION TANK

3 ER/ERCE SERIES EXPANSION TANK

4 TRADITIONAL BOILER

5 SOLAR COLLECTOR

6 DS/DSV SERIES SOLAR EXPANSION TANK

7 STP SERIES TEMPERATURE REDUCING TANK

8 PELLET BOILER / STOVE — ONLY COMBI QUICK

9 SOLAR MODULE — ONLY SOLAR

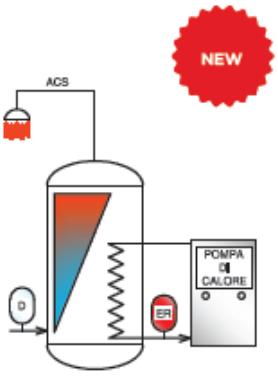
10 PLATE HEAT EXCHANGER — ONLY SAC

11 BIOMASS BOILER

# APPLICATIONS

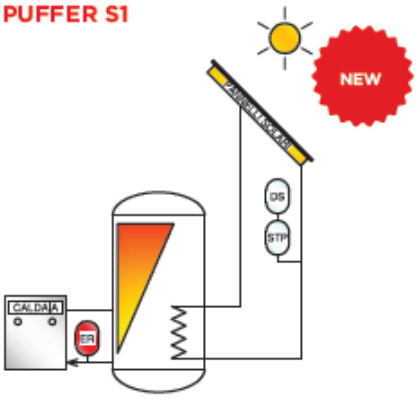
## GLASSLINED CYLINDER FOR HEAT PUMP

### BSP



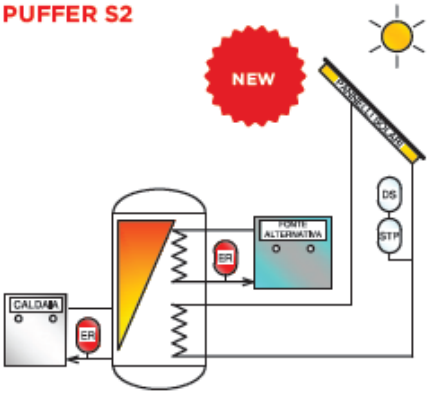

## THERMAL FLYWHEEL WITH SINGLE HEAT EXCHANGER

### PUFFER S1



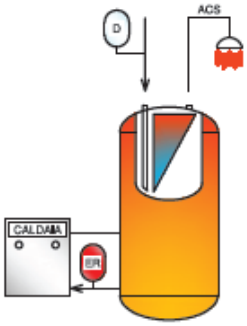

## THERMAL FLYWHEEL WITH 2 HEAT EXCHANGERS

### PUFFER S2

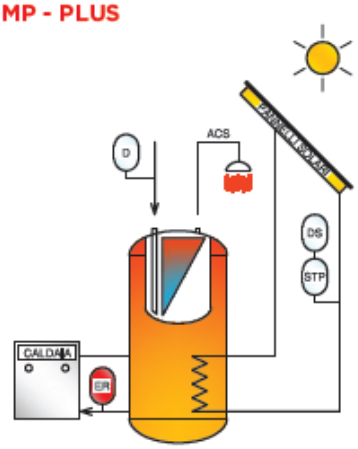



## COMBI

### CMS - STANDARD

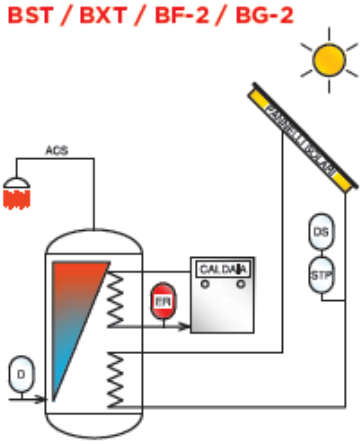



### CMP - PLUS



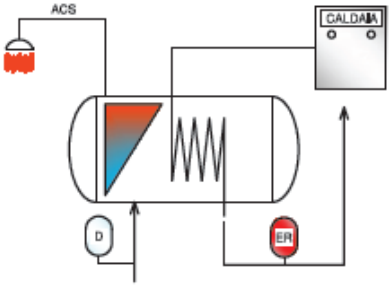

## DHW CYLINDER WITH 2 HEAT EXCHANGERS

### BST / BXT / BF-2 / BG-2

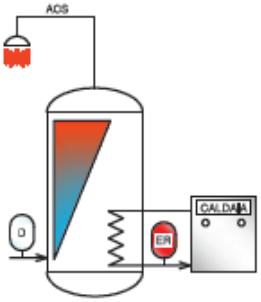



## DHW CYLINDER WITH 1 HEAT EXCHANGER

### BSH HORIZONTAL

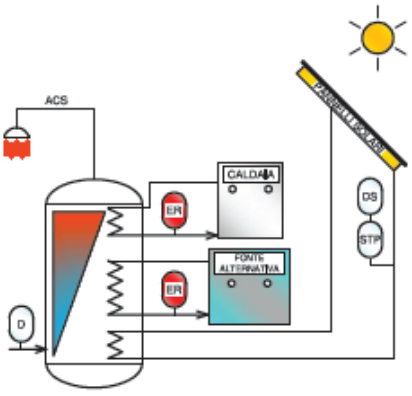



### BSV / BSM / BXV / BF-1 / BG-1



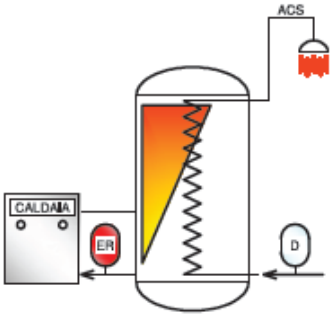

## DHW CYLINDER WITH 3 HEAT EXCHANGERS

### BF-3 / BG-3

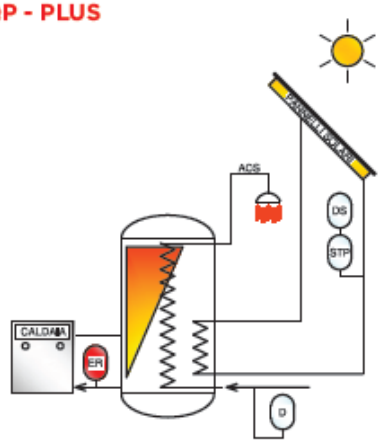



## COMBI QUICK

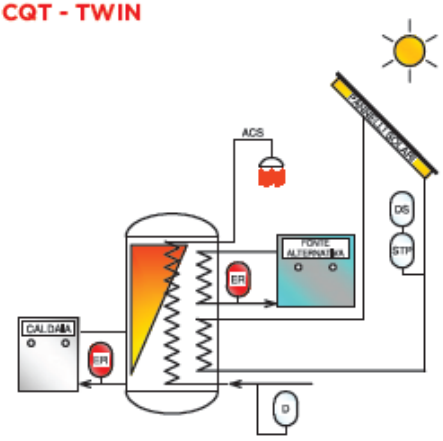
### CQS - STANDARD




### CQP - PLUS




### CQT - TWIN



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