

# installation and maintenance manual

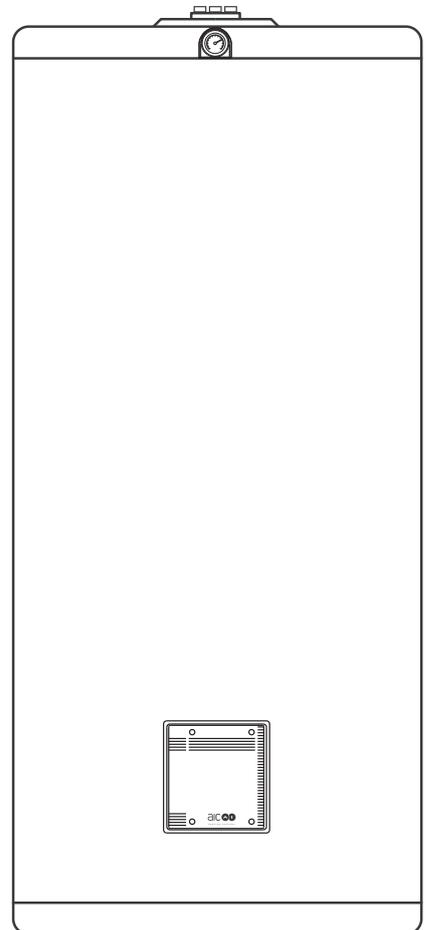
FOR THE INSTALLER AND THE USER

## SILOX S

90·130·190·260·400·600·1000 L

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DOMESTIC HOT WATER STAINLESS STEEL TANKS



The quality of our products is essential to us, and we aim therefore at improving them continually. To this end, we reserve the right to change the technical characteristics and features of our products without prior notice. Please check for the latest revision of the manual on our website ([www.myaic.eu](http://www.myaic.eu)).

The manufacturer shall not be held liable for any malfunction of the product resulting from:

- The failure to comply with the safety and installation instructions provided herein,
- The failure to comply with the safety and operation instructions and recommendations provided herein,
- The failure to have the appliance maintained regularly,
- A modification of the appliance that is not approved by the manufacturer,
- The use of the product for any other purpose than its intended use,
- The use of components and accessories that are not approved by the manufacturer.

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### **Installer's Responsibility**

The installer is responsible for the correct installation and commissioning of the appliance according to:

- The instructions and recommendations provided herein,
- The applicable regulations and standards.

The installer shall provide the end-user with:

- Any relevant explanation about the operation of the appliance and the hydraulic system as well as the safety devices that are provided,
- Any instruction regarding periodic checks to be performed and possible anomaly to be reported,
- All the documentation delivered with the appliance and installed accessories.

The installer shall also inform the end-user of the necessity to have the appliance checked and maintained regularly by a qualified professional.

### **End-user's Responsibility**

To ensure the best performances and safety of the appliance, the end-user shall:

- Make sure that the appliance is installed, and commissioned by a qualified professional,
- Make sure that the appliance is checked and maintained regularly by a qualified professional,
- Comply with all the instructions and recommendations provided in the appliance documentation,
- Make sure to receive from the installer all the necessary explanations related to the operation of the appliance and the safety devices,
- Make sure to receive from the installer all the appliance and accessories documentation,
- Keep all the appliance documentation in a safe place for future use.

The end-user shall use the product for its intended use.



- Should the installer or the end user not comply with the instructions and requirements stated in this manual, the warranty will be void.
- For more information on the warranty terms and conditions, please connect to our website: [www.myaic.eu](http://www.myaic.eu).

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About This Manual

*This documentation is part of the product. It will be handed over to the end-user who will keep it, with all the other applicable documents, in a safe place and readily available for use.*

*Before installing, operating or maintaining the appliance, please carefully read this manual and all the applicable documents provided with the components and accessories. They contain essential safety information.*

Symbols used in this Manual



Indicates an essential instruction which, if not followed, can result in a hazardous situation that can cause serious damage to equipment and/or injuries or death.



Indicates an essential instruction in relation with the presence of electrical power and a danger of electrical shock.



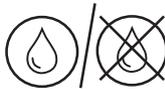
Indicates an important instruction which, if not followed, could result in a hazardous situation that could cause damage to equipment and/or injuries.



*Indicates an important piece of information.*



The electrical supply to the appliance must be activated/deactivated through the external circuit breaker or the power supply cable must be connected/disconnected.



The primary and DHW circuits of the appliance must be full of water/empty.



Primary circuit supply connection.



Primary circuit return connection.



Domestic Hot Water outlet connection.



Cold water inlet connection.

## General Safety Instructions



- This appliance must be installed according to the applicable local regulations and standards by a qualified professional.
- Electrical connections must be carried out according to applicable local regulations and standards by a qualified professional.
- This appliance can be used by children who are at least 8 years old and by persons with reduced physical, sensory or mental capabilities or lack of experience and knowledge, provided that they are under supervision or have been given instructions concerning the use of the appliance in a safe way and that they understand the hazards involved.
- Cleaning and user maintenance shall not be performed by children without supervision. Children shall not play with the appliance.
- Any modification to the appliance and its components is strictly forbidden without the prior written consent of the manufacturer.
- If components need to be replaced, only genuine factory parts or components approved by the manufacturer must be used.



- When the appliance is connected to the electrical network, it must be earthed.
- Make sure that a fuse or circuit breaker of the recommended rating is installed outside the appliance, so as to be able to shut the power down.
- Before performing any operation on the electrical circuit, isolate the electrical supply of the appliance through the external power-cutting device (fuse, circuit-breaker, etc.).



When working on the appliance and the system, make sure to use the appropriate tools to avoid damaging the pipes and components.



- *When unpacking the appliance, check the integrity and condition of the packaging and that all the components and accessories described in the packing list are present. Contact your supplier in case of problem.*
- *When discarding the packaging, do not contaminate the environment. Dispose of it according to the applicable local regulations on recycling.*

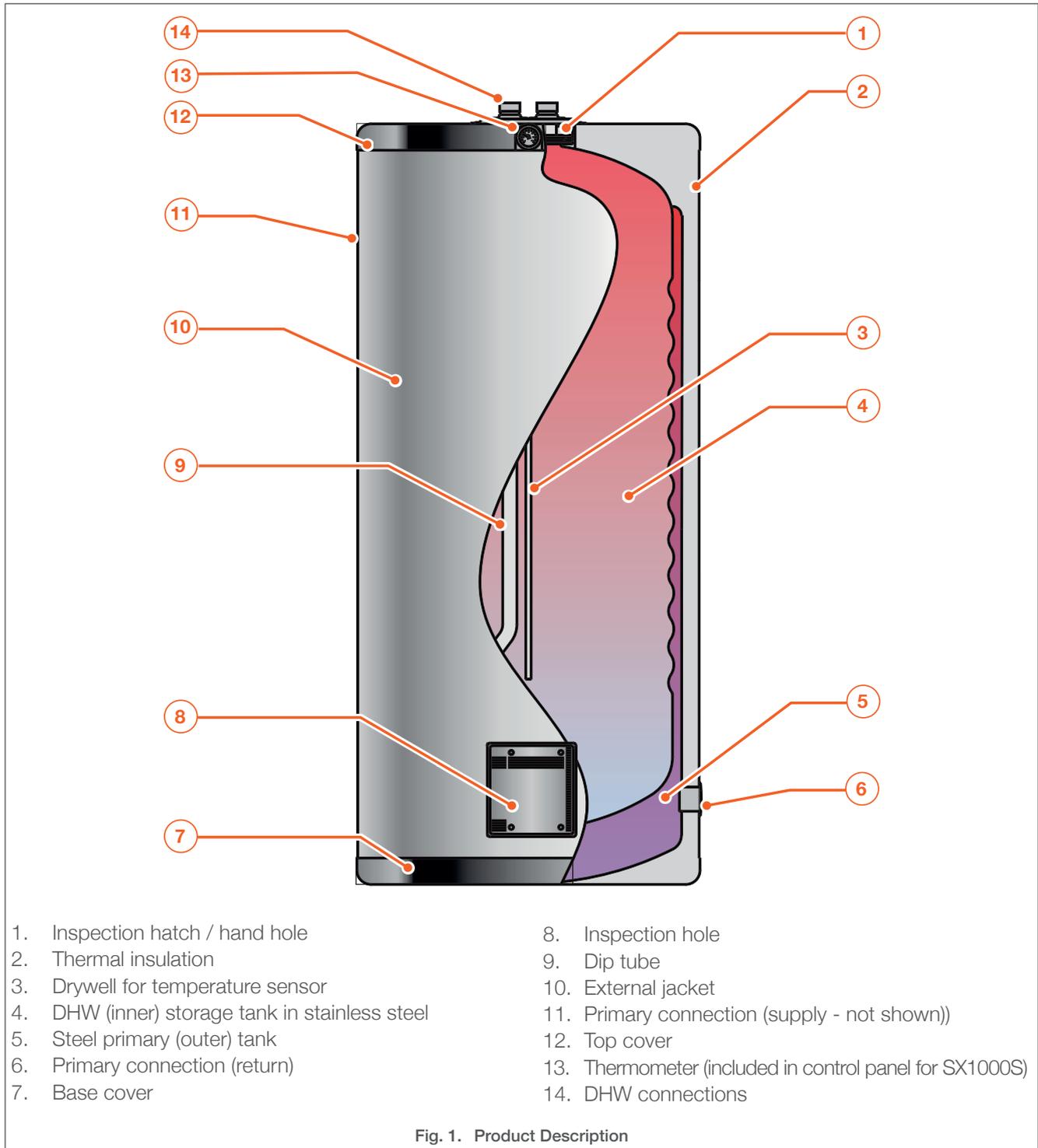
# PRODUCT DESCRIPTION

## SILOX S Tanks

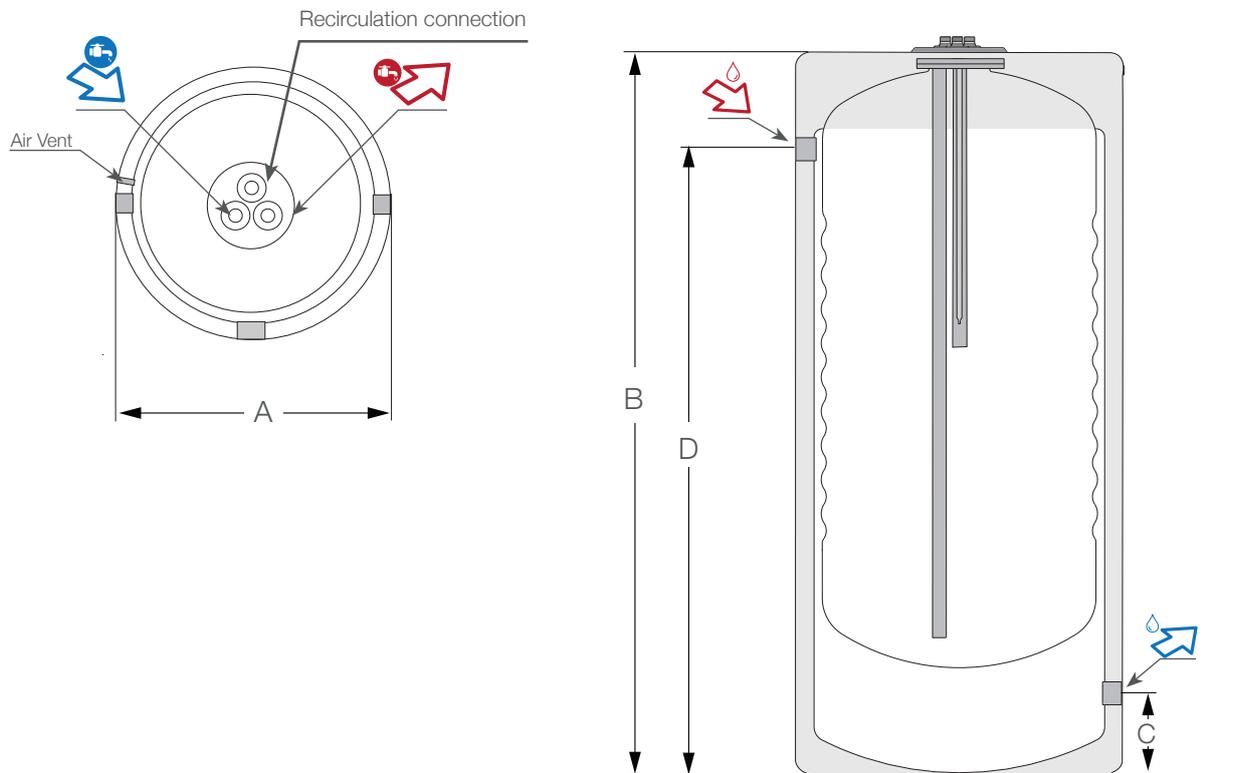
AIC's SILOX S hot water tanks are twin-wall tanks that are designed for the production and storage of Domestic Hot Water. They consist of a steel outer tank (primary) and a built-in stainless steel DHW tank. At each draw-off of DHW and heating cycle, the inner tank expands and contracts, which prevents the adhesion and build-up of sediments.

The tanks are generally installed vertically on the floor and can be connected to various heating sources : boiler, heat pump, solar panels, etc.

Models SX90S to SX190S can also be installed vertically on a wall and are provided with wall brackets.



Dimensions



Dimensions (mm)	SX90S	SX130S	SX190S	SX260S	SX400S	SX600S	SX1000S
A	480	480	620	620	620	770	950
B	749	1155	983	1239	1724	1730	2250
C	170	170	182	182	182	192	336
D	575	980	777	1027	1512	1493	1926

Connections (Ø - in.)	SX90S	SX130S	SX190S	SX260S	SX400S	SX600S	SX1000S
Cold water inlet ( ) [M]	G 3/4	G 3/4	G 3/4	G 3/4	G 1	G 1	G 1 1/4
DHW outlet ( ) [M]	G 3/4	G 3/4	G 3/4	G 3/4	G 1	G 1	G 1 1/4
DHW recirculation [M]	G 3/4	G 3/4	G 3/4	G 3/4	G 1	G 1	—
Air vent connection [F]	G 1/8	G 1/8	G 1/8	G 1/8	G 1/8	G 1/8	G 1/2
Primary circuit supply ( ) [F]	G 1	G 1	G 1	G 1	G 1	G 1 1/2	G 2
Primary circuit return ( ) [F]	G 1	G 1	G 1	G 1	G 1	G 1 1/2	G 2

## TECHNICAL SPECIFICATIONS

Product Data		SX90S	SX130S	SX190S	SX260S	SX400S	SX600S	SX1000S
Total water capacity	l	80	122	187	249	321	570	955
DHW capacity	l	59	92	146	193	256	462	712
Outer (primary) tank capacity	l	21	30	41	56	65	108	243
Heat transfer area	m <sup>2</sup>	0,8	1,0	1,2	1,6	2,4	3,1	4,0
Max. DHW temperature	°C				90			
Max. primary temperature	°C				110			
Operating primary temp.	°C				85			
Max. operating DHW pressure	bar				8			
Max. operating primary pressure	bar				3			
Approx. empty weight	Kg	35	51	64	78	106	151	239
Standing heat loss	W	45	50	58	63	99	103	113
Energy efficiency class		B	B	B	B	C	C	C

Hydraulic Performance*		SX90S	SX130S	SX190S	SX260S	SX400S	SX600S	SX1000S
Peak Flow 45°C	L/10'	180	287	421	594	810	1226	2040
Peak Flow 60°C	L/10'	110	183	270	356	516	789	1314
Peak Flow 45°C	L/60'	597	1046	1199	1862	2389	2936	4902
Peak Flow 60°C	L/60'	270	569	688	973	1357	1700	2837
Continuous Flow 45°C	L/h	470	920	947	1336	1769	2085	3490
Continuous Flow 60°C	L/h	265	545	548	873	1028	1241	2070
Heating time (10°C to 60°C)	Min.	18	20	25	24	23	32	36
Primary flow rate	m <sup>3</sup> /h	1,5	3,2	3,4	4,7	6,2	7,3	12,2

\* Primary flow water at 85°C - cold water from mains at 10°C

Pressure Drop Curves

Below are the pressure losses between input and output connections of the primary circuit for different flow rates

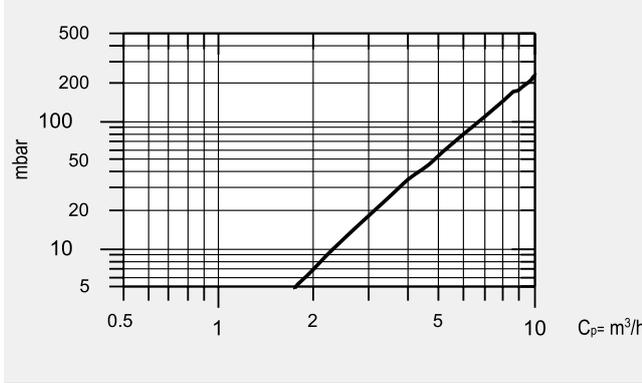


Fig. 2. SX90S Pressure Drop Curve

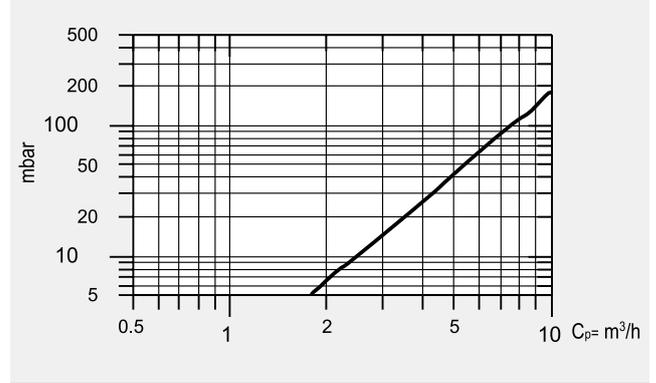


Fig. 3. SX130S Pressure Drop Curve

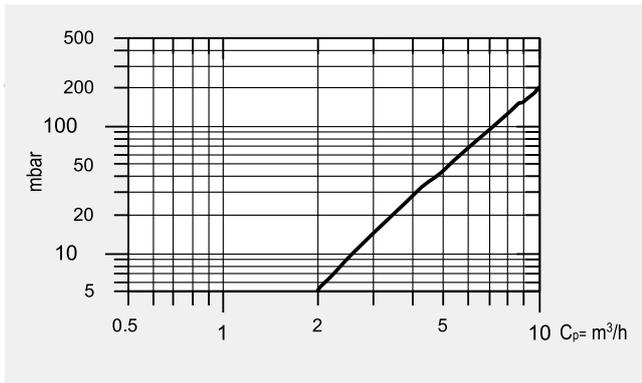


Fig. 4. SX190S Pressure Drop Curve

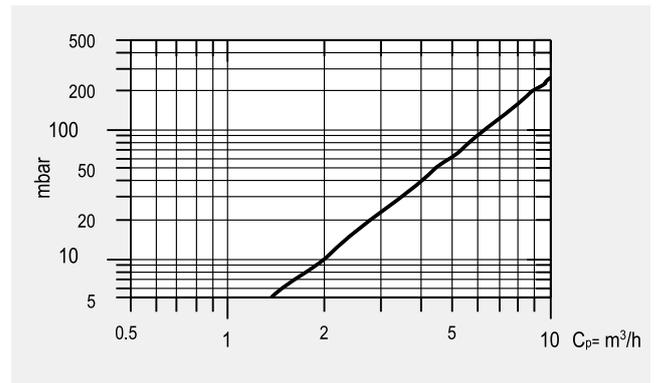


Fig. 5. SX260S Pressure Drop Curve

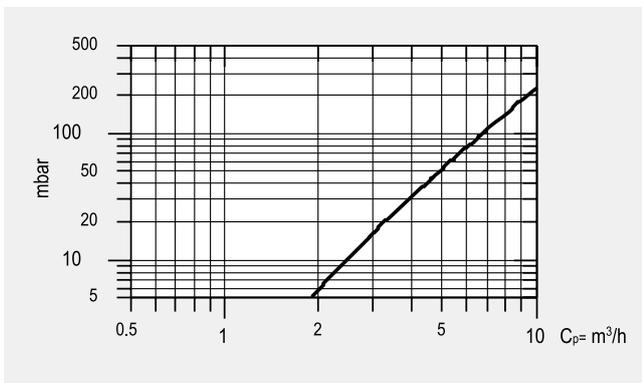


Fig. 6. SX400S Pressure Drop Curve

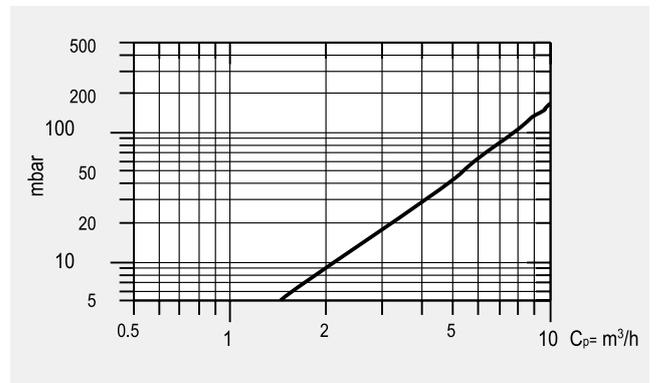


Fig. 7. SX600S Pressure Drop Curve

## Safety Instructions for the Installation



- ▶ All connections must be carried out in accordance with current standards and regulations in force.



- ▶ When the appliance is connected to the electrical network, it must be earthed.
- ▶ Make sure that a fuse or circuit breaker of the recommended rating is installed outside the appliance, so as to be able to shut the power down.
- ▶ Before performing any operation on the electrical circuit, isolate the electrical supply of the appliance through the external power-cutting device (fuse, circuit breaker, etc.)



- ▶ The appliance must be installed in a dry and protected area, with an ambient temperature comprised between 0 and 45°C.
- ▶ Make sure to protect the appliance and hydraulic system against freezing.
- ▶ The appliance must be installed to ensure easy access at all times.
- ▶ Make sure to use the appropriate tools to avoid damaging the pipes and components.
- ▶ Install all pipes and ducts without stress to prevent any leaks from occurring.

## Package Contents

- ▶ A SILOX S twin-wall tank
- ▶ An Installation and Maintenance manual
- ▶ SX90S to SX190S - a wall bracket for vertical installation on a wall

## Optional Accessories (to be purchased separately)

- ▶ A safety group, comprised of:
  - Pressure reducing valve (6 bar)
  - Safety & check valve assembly,
  - Expansion vessel

## Unpacking the Product

1. Carefully remove the packaging and protections.
2. Discard packaging according to applicable local regulations.

## Installing and Preparing the Tank

- ▶ Install the tank on the wall as required, using the provided wall bracket (SX90S to SX190S models only).
- ▶ Carry out hydraulic connections according to **“Hydraulic Connections” on page 13.**

## Safety Instructions and Recommendations for the Hydraulic Circuits



Make sure that the DHW circuit is provided with a safety group and an expansion vessel that are appropriate for the appliance power and the system size, and the increase in temperature and pressure.



- › Always fill and pressurise the inner tank (DHW) before filling the outer (primary) tank. Failure to comply may damage the inner tank.
- › If the supply pressure from the water network is higher than 8 bar, make sure to install a pressure reducing valve.
- › Verify the water quality of the network according to the requirements defined in this manual.
- › In case inhibitors are used in the system, consult your AIC representative for the product suitability.
- › Any antifreeze used in the primary circuit must comply with Public Hygiene Regulations and must be non-toxic. A food-grade Propylene Glycol formulated with a corrosion inhibitor is recommended.
- › Consult your AIC representative to determine the compatibility of the antifreeze and additive products with the appliance materials.



- › The heating circuit is made of carbon steel. Therefore, re-oxygenation of the CLOSED primary circuit is not permitted.
- › It is recommended to install the following devices in the system to prevent primary circuit contamination and the production of scale :
  - Plate heat exchanger, combined with a micro-pollutant separator, which will protect the appliance from any contaminants present in an old heating system, where fittings and pipes can be corroded. This is also mandatory for open systems where oxygen can penetrate the system and cause corrosion.
- › In DHW circuits, there is a risk of bacteria Legionella development if temperature is too low. Make sure that DHW circuit is brought regularly to a temperature higher than 60°C.



- › *Using antifreeze in the primary circuit will reduce the heating performance. The higher the concentration of antifreeze in the circuit, the lower the performance.*
- › *The circuit diagrams are theoretical representations that do not necessarily include all the required safety devices. Make sure to plan correctly your system according to the applicable local regulations and state-of-the-art practices.*

## PRODUCT INSTALLATION

### Recommendations for the Quality of Water (Primary circuit)

To prevent the formation of scale and sludge in a closed heating circuit through the penetration of oxygen and carbonates, follow the recommendations below:

- ▶ Before filling the system, clean it according to standard EN14336. Chemical cleaning agents can be used.
- ▶ If the circuit is in bad condition, or the cleaning operation was not efficient, or there is a large volume of water in the system (e.g. cascade), it is recommended to separate the appliance from the heating circuit using a plate heat exchanger or an equivalent accessory. In that case, it is recommended to install a hydrocyclone or magnetic filter on the system side.
- ▶ Limit the fill operations. To control the quantity of water added into the system, install a water meter on the filling line of the primary circuit. No more than 5% of the total content of the system is allowed annually.
- ▶ Automatic filling systems are not recommended unless the fill frequency is checked and the levels of scale and corrosion inhibitor are maintained at an appropriate level.
- ▶ If the system needs to be refilled frequently, check for leaks in the primary circuit.
- ▶ Inhibitors may be used according to standard EN 14868.
- ▶ An air separator (on the appliance supply circuit) combined with a dirt separator (upstream of the appliance) must be installed according to the manufacturer's instructions.
- ▶ Additives can be used to keep the oxygen in solution in the water.
- ▶ Use the additives in accordance with the instructions of the manufacturer of the water treatment product.

### Water Hardness

- ▶ If the hardness of the fill water is higher than 20° fH (11,2° dH), soften it. At commissioning, the water should be soft.
- ▶ Check regularly the water hardness and enter the values in the maintenance log sheet (provided at the end of the manual).

Water hardness	°fH	°dH	mmolCa(HCO <sub>3</sub> ) <sub>2</sub> / l
Very soft	0 - 7	0 - 3.9	0 - 0.7
Soft	7 - 15	3.9 - 8.4	0.7 - 1.5
Fairly hard	15 - 25	8.4 - 14	1.5 - 2.5
Hard	25 - 42	14 - 23.5	2.5 - 4.2
Very hard	> 42	> 23.5	> 4.2

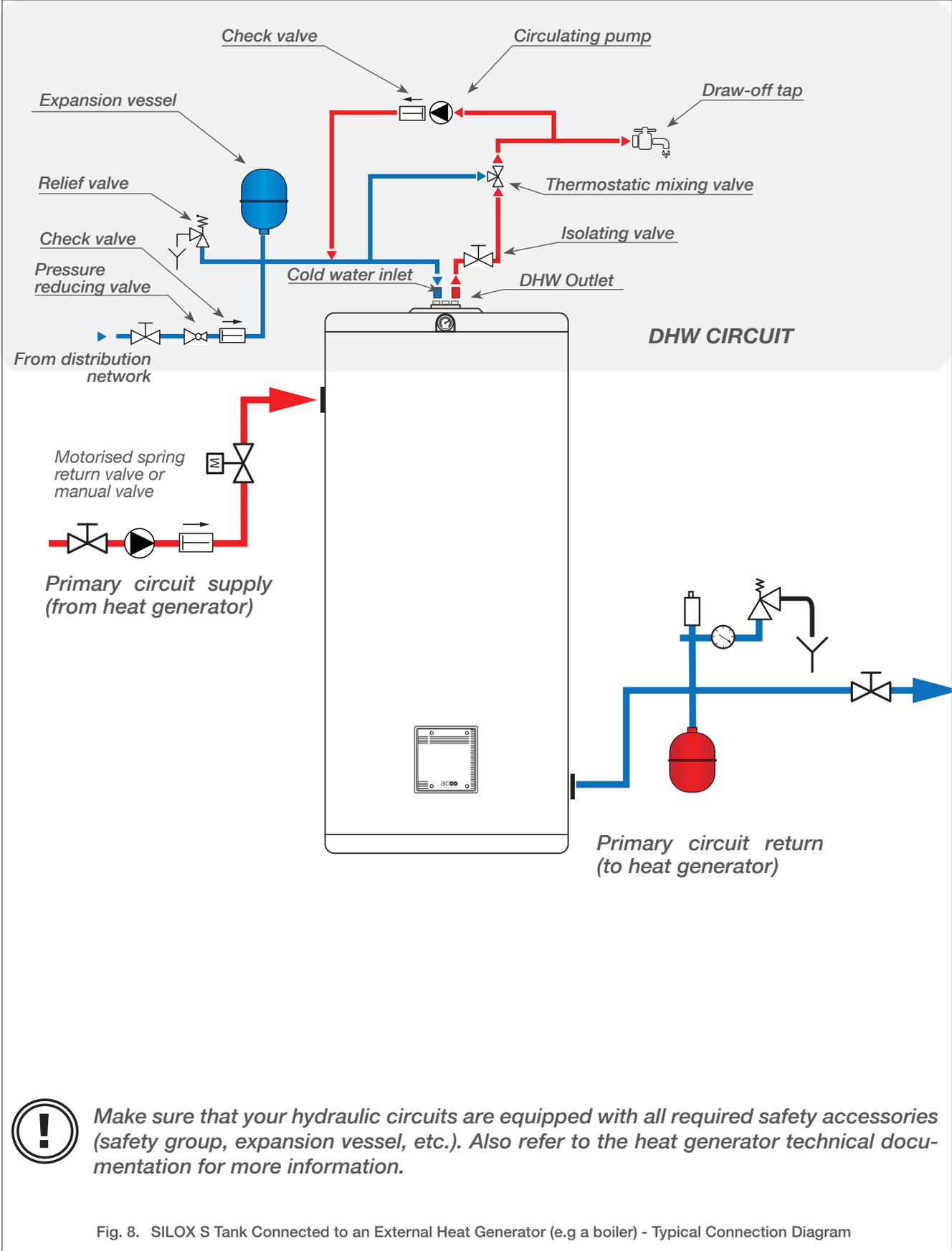
### Water Parameters

- ▶ In addition to the oxygen and the water hardness, other parameters of the water must be checked. Treat the water if the measured values are outside the range of the table below.

Water Parameters	Range
Acidity	8.2 < pH < 9.0
Conductivity	< 400 µS/cm (at 25°C)
Chlorides	< 125 mg/l
Iron	< 0,5 mg/l
Copper	< 0,1 mg/l

- ▶ AIC recommends to have the DHW circuit operating at more than 60°C to prevent the development of bacteria in the DHW circuit.

Hydraulic Connections



## COMMISSIONING

### Filling the Tank

#### Condition(s):

Tank flushed with fresh water.

#### Filling procedure:



*Always fill and pressurise the inner tank (DHW) before filling the outer (primary) tank. Failure to comply may damage the inner tank.*

#### DHW Tank:

1. Connect the cold water circuit to the distribution network outlet.
2. Make sure that the isolating valve of the circuit is open
3. Open a hot water draw-off tap at a high point in the system
4. Once the air is purged and the flow has stabilised at the tap, close the tap.

#### Primary tank:

1. Fill the primary circuit through the primary circuit supply connection (inlet).
2. Bleed the air from the primary tank and repeat water filling until you reach 1,0 bar to 1,5 bar. Take care not to exceed 1,5 bar.

#### Follow-on Task(s):

- › Check that there are no leaks
- › Start the boiler as required. Refer to the **Start-up** procedure opposite.

### Starting Up

#### Condition(s):



#### Start-up procedure:

1. Turn on the heat generator connected to the tank.



*As the tank is connected to a heat generator (e.g. a boiler), the DHW demand will be generated through the heat generator controller. Please refer to the heat generator technical manual for the correct start-up procedure.*

2. Allow the tank to heat up and reach set temperature.
3. Run water from a hot draw-off tap and adjust DHW thermostatic mixing valve to a suitable temperature (Minimum supply temperature 60° on systems with a pumped return).

#### Follow-on Task(s):

Check that there are no leaks.

## Safety Instructions and Recommendations



- Water flowing out of the drain valve can be extremely hot. Use extreme caution when draining a hot appliance.
- Once the inspection and maintenance tasks are complete, ensure that all removed components are reinstalled and all connections are tight and secured.



Before performing any maintenance operation, shut down the appliance using the appliance on/off switch and isolate the electrical supply of the appliance through the external power-cutting device (fuse, circuit-breaker, etc.), unless power is required for the procedure (it will then be indicated in the procedure).



- Inspection and maintenance tasks should be carried out every 12 months.
- AIC recommends that the maintenance of the appliance and its components is carried out by a qualified professional.
- Defective parts and components may only be replaced by genuine factory parts or parts approved by the manufacturer.
- Replace any gaskets or seals present on the removed components before reinstallation, unless otherwise specified in the procedures.
- Operate manually the safety valves at least once a year.
- If the primary circuit needs to be topped up, allow the appliance to cool down and only add small quantities of water at a time. Adding a large quantity of cold water in a hot appliance can damage the appliance permanently.
- If the primary circuit needs to be topped up regularly, check that there is no leak.

## Periodic Checks and Maintenance Tasks



Checks 1 and 2 below should be carried out by the end-user, who should then call a qualified professional if any action is required.

<i>Item</i>	<i>Action</i>	<i>Frequency (times/year)</i>
1. On the pressure gauge, check the operating pressure of the primary circuit is between 1.0 and 1.5 bar	If pressure is too low, top up the circuit and bleed the air.	3 or 4
2. Check the absence of water on the floor	If there is water on the floor: <ul style="list-style-type: none"> <li>‣ Look for leaks in the circuit and repair them, or</li> <li>‣ Correct condition if water seems to be discharged regularly by the safety valve(s).</li> </ul>	3 or 4

## MAINTENANCE

Item	Action	Frequency (times/year)
3. Manual operation of safety valves	<ul style="list-style-type: none"> <li>› Allow tank to cool.</li> <li>› Slowly twist open the relief valve.</li> <li>› Check that water flows freely.</li> <li>› Check that the valve reseats correctly when released.</li> </ul>	1
4. Chemical Descaling	<ul style="list-style-type: none"> <li>› Isolate the tank from the DHW circuit.</li> <li>› Fit a de-scaling pump across the inlet and outlet.</li> <li>› Prime and run the pump, check that the circuit is sound.</li> <li>› Gradually introduce the descaling agent until the correct amount is added for the volume of water.</li> <li>› Run the pump and monitor the pH value, the process is complete when the pH stabilises at less than 0,8 for 20 minutes.</li> <li>› Neutralise the de-scaling agent with soda (NaOH) to obtain a pH of 7.</li> <li>› Rinse the tank with fresh water.</li> <li>› After rinsing treat with a neutralising agent (having a pH of approximately 9).</li> <li>› Rinse again.</li> </ul>	As required



***Presence of large quantities of scale in the water tank will reduce both its capacity and performance. In case of unsoftened water or hard water, descale the tank regularly.***

## Draining the Tank



*Always de-pressurise and/or empty the outer (primary) tank before de-pressurising and emptying the inner tank (DHW). Failure to comply may damage the inner tank.*

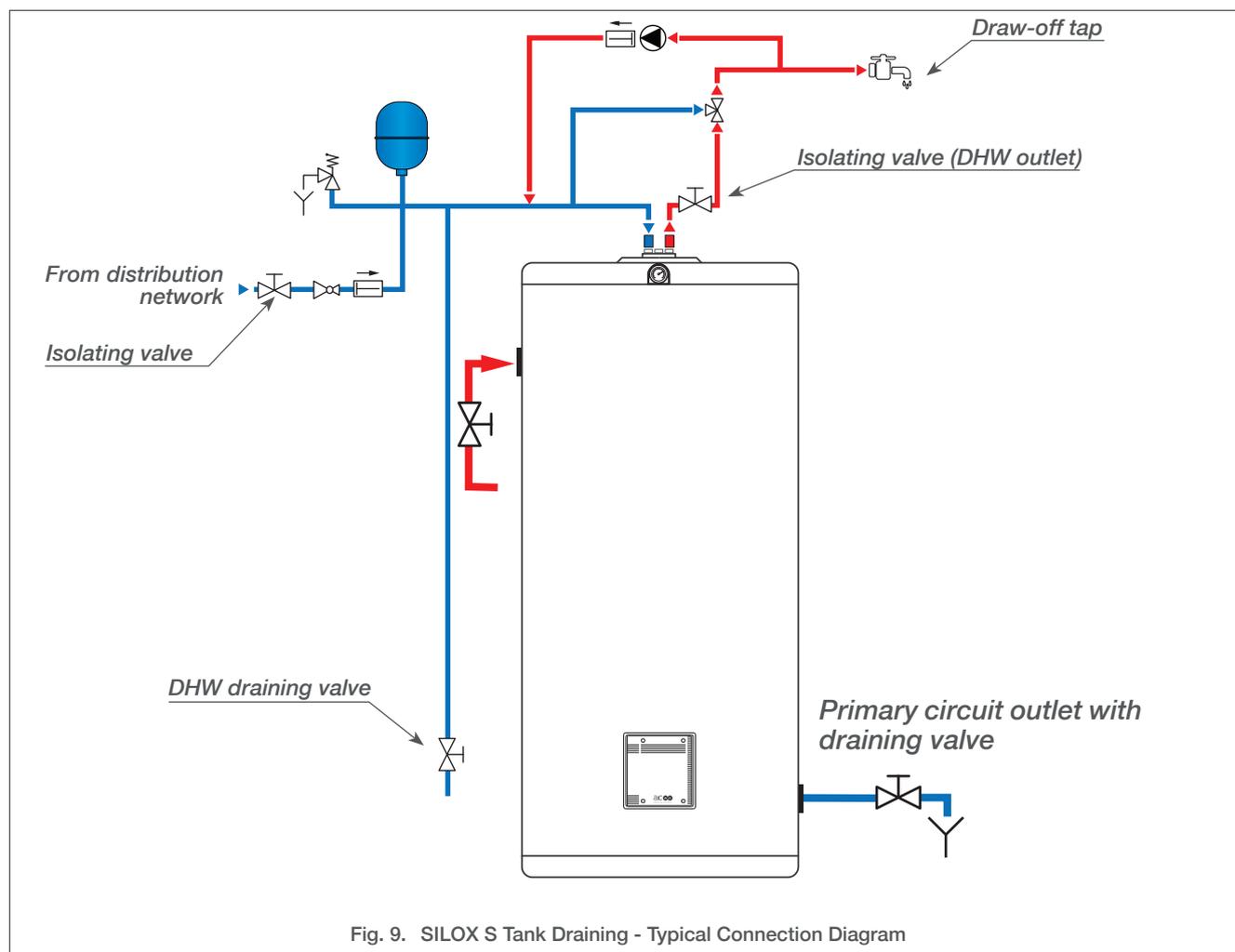


Fig. 9. SILOX S Tank Draining - Typical Connection Diagram

### Condition(s):

Allow water in the appliance to cool down before draining.



*Water flowing out of the drain valve can be extremely hot. Use extreme care when draining a hot appliance.*

### Draining procedure:



*Always drain/depressurize the outer tank before draining the inner tank, to prevent any deformation of the inner tank due to pressure of the primary circuit.*

Primary tank:

1. Isolate the supply circuit.

2. Open the air vent located at the top of tank.
3. Connect draining valve to the drain.
4. Open draining valve located at the primary circuit outlet.

DHW Tank:

1. Close the filling connection to the water distribution network.
2. Close the isolating valve of the DHW outlet.
3. Open a hot water draw-off tap in the system.
4. Connect the DHW draining valve to the drain.
5. Open the isolating valve of the drain connection.

**Follow-on Task(s):**

- ▶ Close all valves and tap, as required

## TROUBLESHOOTING

Problem	Cause(s)	Solution(s)
The tank does not produce hot water	Primary circuit from external heat generator is cold	1. Check that heat generator (e.g. boiler) is operating properly (refer to the heat generator manual).
	The isolating valves of the primary circuit are closed	2. Open the isolating valves to allow primary water to fill the outer tank  <b><i>Make sure that the DHW inner tank is full of water before pressurizing the primary circuit.</i></b>
	There is air in the primary tank or circuit	Bleed the air from the primary tank and circuit (refer to the heat generator manual for more information, as required).



**Product Fiche AIC SILOX S**  
 Referring to Commission Delegated Regulation No 812/2013

Model	Energy efficiency class	Standing loss	Volume
SX90S	B	45 W	80 l
SX130S	B	50 W	122 l
SX190S	B	58 W	187 l
SX260S	B	63 W	249 l
SX400S	C	99 W	321 l
SX600S	C	103 W	570 l
SX1000S	C	113 W	955 l

SX S FICHE REVA 15/11/2020

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