S20 SERIES

CALORIFIER WITH SERPENTINE COIL

OPERATING & MAINTENANCE MANUAL

MODELS 100 - 300 - 500 - 750 - 1000 - 1500

01/2008 CODE: 560965 CE Directive 2006/95/CEE
British Standard EN 60335-1 (C73800)

ATLANTIC BOILERS
HIGH EFFICIENCY BOILER-PLANT

ATLANTIC 2000 - boilerplant sales ACM ATLANTIC - commissioning and maintenance ATLANTIC 4422 – spares
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SERPENTINE WATER HEATER
INSTRUCTION MANUAL

1. General aspects

The serpentine water heater is a pressurised container manufactured by Atlantic Boilers in accordance with the safety requirements established in the European Parliament's Directive 97/23/EC and the 29 May, 1997 Council concerning the legislation on pressure equipment. This instruction manual is valid for all models.

The following instructions have been written following that established in point 3.4 of Annex I of Directive 97/23/EC and each hydropneumatic tank is to be sold accompanied by this document.

The heater's electric components have been manufactured in accordance with those requisites established in the Directive 89/336/EC from the European Parliament and the 1 May, 1989 Council on member state legislation on Electromagnetic compatibility, with tests carried out in CETIAT Nº 2214094/2 on 28/10/2002 and the council's directive 73/23/EEC from 19 February, 1973 concerning the member's states regulations on electric equipment to be used with specific voltage limits.

2. Technical characteristics and uses of the serpentine heater

The serpentine water heater is produced in DUPLEX 2205 stainless steel, thus suited to resist the combined actions of drinking water (with characteristics in accordance with the current regulations) at 70º C and with chlorine dissolved in it.

It is a sealed container designed for the following working conditions:
- Tested pressure Primary/ Secondary: 16 / 16 bar.
- Maximum working pressure Primary/Secondary: 8 / 8 bar.
- Min/Max designed temperature: 5 / 90 ºC
- Operating temperature: 60 °C
- Power supply voltage: 230 V 50/60 Hz (Single phase)
  (If with an electric panel)
- Volume: Depending on the model (SEE THE SPECIFICATIONS PLATE ON THE HEATER)

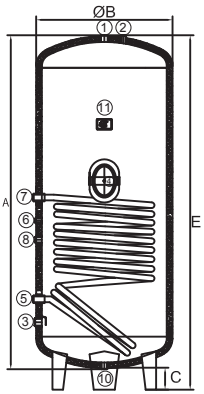
You will find more of the serpentine water heater's characteristics on the specifications plate on the tank, including:
- Year made
- Tested pressure.

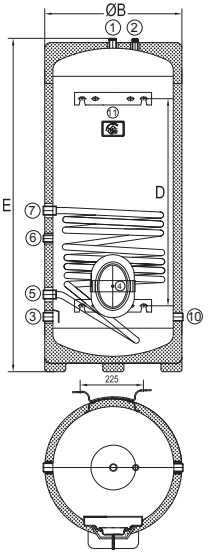
Serpentine water heaters are vertical tanks for preparing and accumulating hot tap water in indoor facilities (buildings, homes, hospitals...). Cold tap water is heated inside the water tank through one or more tubular serpentine coils filled with water from the primary circuit heating the water as it flows around the serpentine. For use in the EU and according to the new Regulation on Building Heating Installations RITE (by its Spanish acronym), for health criteria in the prevention and control of legionellosis, the use of a 400 mm manhole is obligatory to enable access to inspect, clean, disinfect and take samples for all equipment with a capacity equal to or greater than 750 l.

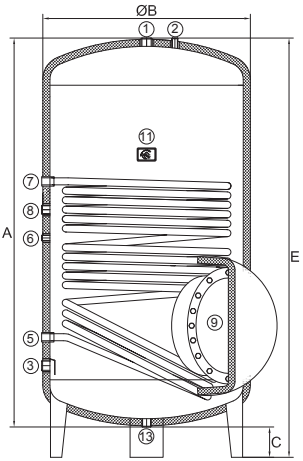
GENERAL DIMENSIONS

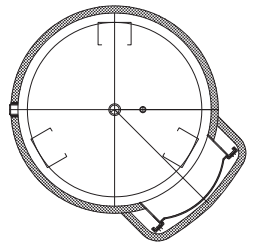
REFER.	MODEL	CAP. (L)	General dimensions (mm)				
			A	ØB	C	D	E
1030020	**S20**	80		430		540	980
1030021	**S20**	100		430		740	1170
1030022	**S20**	125		510		590	1055
1030023	**S20**	150		510		740	1205
1030024	**S20**	200		580		740	1230
1030025	**S20**	250		580			1480
1030026	**S20**	300		580			1760
1030027	**S20**	500	1750	720	105		1860
1030028	**S20**	740	1660	890	130		1810
1030029	**S20**	1000	2110	890	130		2260
1030030	**S20**	1500	2390	1020	135		2505
1030031	**S20**	2000	2145	1270	150		2260
1030032	**S20**	2500	2645	1270	150		2830
1030033	**S20**	3000	3050	1270	150		3190

	DIMENSIONS AND CONNECTIONS
1	Hot water outlet
2	Safety valve
3	Cold water inlet
4	Registry opening-Optional electric kit
5	Primary solar circuit return
6	Thermostat sensor connection
7	Primary solar in
8	Recirculation. (Starting at 250 l.)
9	Primary boiler return
10	Primary boiler in
11	Drain (starting at 500 l.)
12	Manhole starting at 750 l.)
13	Thermometer connection









CONNECTIONS

MODEL	CAP. (L)	CONNECTIONS									
		1	2	3	4	5	6	7	8	9	10
S20	80	3/4”	1/2”	3/4”	1,1/4”	3/4”	1/2”	3/4”			
S20	100	3/4”	1/2”	3/4”	1,1/4”	3/4”	1/2”	3/4”			
S20	125	3/4”	1/2”	3/4”	Elíptica 150 x100	3/4”	1/2”	3/4”			
S20	150	3/4”	1/2”	3/4”	Elíptica 150 x100	3/4”	1/2”	3/4”			
S20	200	3/4”	1/2”	3/4”	Elíptica 150 x100	3/4”	1/2”	3/4”			
S20	250	3/4”	1/2”	3/4”	Elíptica 150 x100	3/4”	1/2”	3/4”	3/4”		3/4”
S20	300	1”	1/2”	1”	Elíptica 150 x100	3/4”	1/2”	3/4”	3/4”		3/4”
S20	500	1”	1/2”	1”	Elíptica 150 x100	1”	1/2”	3/4”	3/4”		3/4”
S20	740	1,1/4”	1/2”	1,1/4”	Elíptica 150 x100	1”	1/2”	1”	1”	ø interior 400	1”
S20	750	1,1/4”	1/2”	1,1/4”		1”	1/2”	1”	1”	ø interior 400	1”
S20	1000	1,1/2”	1/2”	1,1/2”		1”	1/2”	1”	1”	ø interior 400	1”
S20	1500	2”	1/2”	2”		1”	1/2”	1”	1”	ø interior 400	1”
S20	2000	2”	1/2”	2”		1”	1/2”	1”	1,1/4”	ø interior 400	1,1/4”
S20	2500	2”	1/2”	2”		1”	1/2”	1”	1,1/4”	ø interior 400	1,1/4”
S20	3000	2”	1/2”	2”		1”	1/2”	1”	1,1/4”	ø interior 400	1,1/4”

3. Installation

The heater must be installed by an Authorised technician or Company, keeping in mind the current applicable national regulations and instructions in this manual

If the tank is not installed, started-up and handled properly, people, animals or goods may be harmed, for which the manufacturer can not be held liable.

The water heater can be installed to a wall or the floor. When the tank's capacity is equal to or greater than 250 litres, they must always be installed on the floor.

- Wall mount tanks:
  The tap water heater tank is mounted to the wall with bolts of steel or a similarly strong material, 10mm in diameter, inserted at least 8 cm in. For thicknesses of 15 cm or less, the bolts must pass through the wall and joined with metallic plates. They must not be installed on single hollow brick walls.

- Floor tanks:
  Keeping in mind that the plate must be resistant to the permanent pressure from the weight of the heater when filled with water.

HEATER LOCATION

The heater must not be installed outdoors, unless explicitly having ordered it for this purpose. If installed outdoors, we recommend that it not be exposed to direct sunlight.

All equipment must be installed in an accesible place so that in case of breakdown, the technician can access for repair or withdraw in case of breakage.

The tank is thermally insulated with injected polyurethane liquid, so the loss of heat is kept to a minimum. However, in order to obtain maximum results, we recommend not installing it in cold places or with drafts.

If the heater comes with an electric resistor heater (thermostat), also keep in mind the location indications in accordance with the applicable electrical regulation.

WATER CONNECTION

Connection to the tap water circuit

The following devices are installed on the heater following the direction of the water circuit:

- Water inlet valve.
- A pressure reduction valve is to be installed when the water supply pressure is greater than the tank's maximum operating pressure (8 bar) and is to be calibrated to a value equal to or less than the operating pressure.
- Anti-return valve.
- A safety valve (which can also be installed to the tank) with a drain pipe that can freely drain above the upper border of the water receptacle. The valve's drain pipe must not be connected directly to a sewage drain. Drainage must be done so as to effectively avoid damage to people, animals or goods.

The safety valve is regulated at a pressure so as not to surpass the tank's maximum operating pressure (8 bar), and its safety devices are sealed if the valve has a device for changing pressure errors.

An faucet can not be installed between the tank and safety valve.

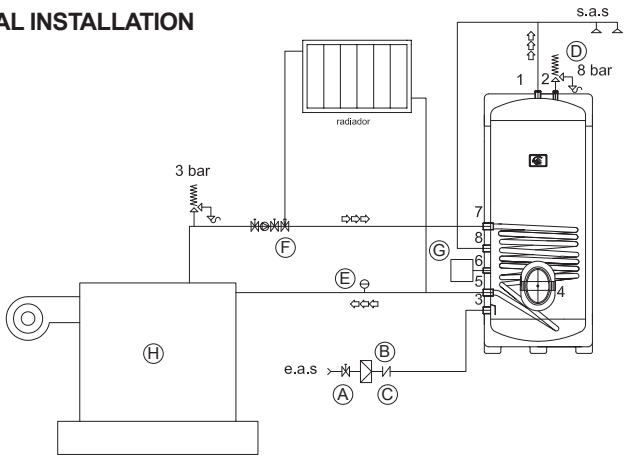
Connection to the heating element

The tank's primary circuit, specifically the serpentine, must be connected to the output (7) and return (5) of the heating element (boiler) and the tap water regulating thermostat, which must be screwed to the tank's connection (6), to the sectioning/regulating/control valve (three-way valve) or to the heated liquid pump to the serpentine when applicable.

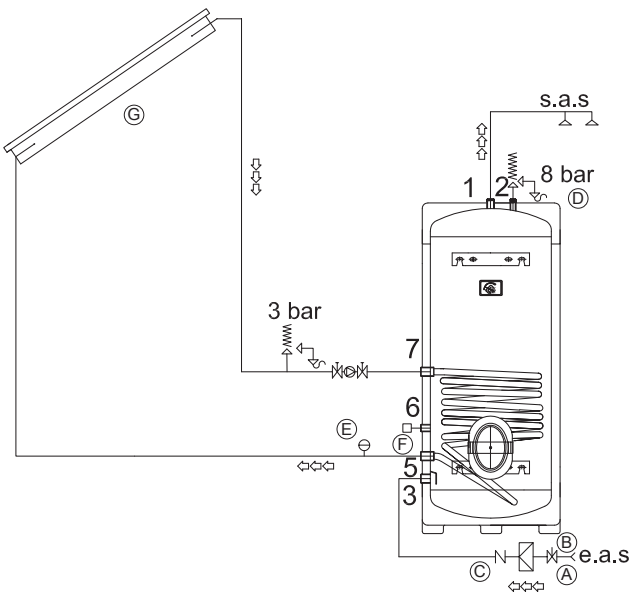
An expansion vessel (E) with the proper characteristics is installed to the primary circuit return.

INSTALLATION DIAGRAM

VERTICAL INSTALLATION



A. Shutoff valve.
B. Pressure reduction valve.
C. Anti-return valve.
D. Safety valve.
E. Expansion tank.
F. Diverter valve.
G. Thermostat
H. Boiler



A. Shutoff valve.
B. Pressure reduction valve.
C. Anti-return valve.
D. Safety valve.
E. Expansion tank.
F. Thermostat
G. Solar panel

4. Start-up

These operations must be performed by an authorised technician, keeping in mind the current applicable national regulations and following instructions.

Once installed, the tank must be filled with water by opening the home's main faucet, a hot water faucet (ex. shower, sink…) and a cold water faucet from the equipment until all of the air is expelled from the tank. Then close the water faucet.

The heating liquid is filled and regulated by the hot water thermostat at 60ºC. Then turn the heater on and it will run until the water in the tank reaches the thermostat's set temperature.

During the tap water heating phase, it is common for the safety valve to leak slightly. Never plug the valve since that could induce the tank to explode.

Check to see that water is not leaking from any connections; if so, tighten them. If after 24-48 hours the problem persists, contact the distributor.

5. Maintenance

Maintenance operations must be performed by an authorised technician, keeping in mind the current applicable national regulations and following instructions.

In order to properly maintain the tank, we recommend inspecting the inside every year. To do so you must empty it following these steps:

- Close the cold tap water inlet.
- Open a hot water faucet somewhere around the facilities and let it run at least until the tank has been depressurised.
- Open the tank's drain.
- Once it is completely drained, open the manhole (tanks>250 l) and clean the inside of the tank with water and a plastic or steel brush. If the tank is smaller than 250 L, you can open the cold water connection when the drain connection is open, and flush any sediment accumulated at the bottom of the tank.
- Then close the drain and manhole or cold water inlet.

Two methods for the disinfection process of heating tanks

- With a chemical disinfection like chlorine, follow this procedure:

  • Chlorinate the tank with 20-30 mg/l of residue free chlorine, at a temperature at or below 30 ºC and a pH of 7-8, passing 1-2 mg/l through the complete circuit and maintaining it for 3 to 2 hours. Alternatively you can use 4-5 mg/l in the deposit for 12 hours.
  • Neutralise the amount of residue-free chlorine and drain.
  • Clean the tank walls thoroughly, eliminating incrustations and carrying out the necessary repairs and rinsing with water.
  • Refill with water and re-establish the normal operating conditions. If reclorination is necessary, use set dosages.

- With a thermal disinfection , follow this procedure:

  • Empty the system, if necessary clean the tank walls thoroughly, carrying out any necessary repairs, and rinse with clean water.
  • Fill the water heater with water and raise the water temperature to 70º C and maintain it for at least 2 hours. Then open the faucets and showers by sector for 5 minutes sequentially. Confirm that the temperature is coming out at all points at 60º C.

Once maintenance has been completed, to start up the heater again follow the steps in point 5 of this manual.

To clean the outside of the tank, we suggest using a humid washcloth with the proper cleaning products. Do not use abrasive products or solvents.

We recommend draining the tank if it will not be used for long periods of time, or if not used during freezes.

6. Safety measures for waste drainage

The following safety instructions must be strictly enforced to avoid hurting people, animals or things including the tank itself.

The tank's operating pressure must not be greater than that indicated in this manual and on the specification's plate on the tank. The technical specifications on this plate must always be followed.

The tank should not be disconnected from its installation without previously having completely depressurized it.

Do not use the water heater for any other non-designated purpose.

7. Considerations if the serpentine water heater has a control panel. MODEL S20-M

Upon the client's request, the serpentine water heater may come with a control panel. In figure 1 we can see its location.

7.1 Control panel parts

The control panel has the controls to operate the heating system (ex. boiler).

- Thermostat
  This allows you to set the temperature at which to heat the water in the tank with a heating element (ex. boiler).The common temperature is 60º C.

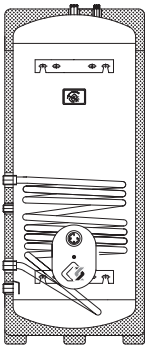


Figure 1- Control panel location.

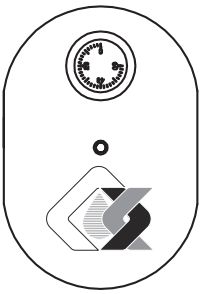


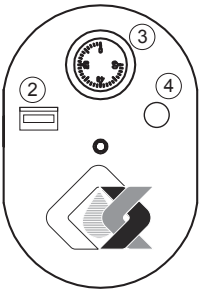
Figure 2- Control panel.

8. Serpentine water heater with electric panel with a rheostat. MODEL S20-CE

All serpentine water heaters come with a manhole opening which upon the client's request can come with an electric panel with a rheostat.

8.1 Parts of the additional electric system.

- **Control panel**
  The control panel includes operating controls for the heater's rheostat. It includes a thermostat, switch and safety thermostat.



2. Switch
3. Thermostat
4. Safety thermostat

- **Electric resistor**
  Water is heated through the DUPLEX 2205 stainless steel sheathed electric resistor. With the sheath, maintenance is made easier since the tank must not be drained when replacing the resistor.
  - Power supply voltage: 230 V 50/60 Hz

- **Temperature sensor sheath.**
  This sheath has a thermostat hot water temperature regulator shell, the thermometer and safety thermostat shell.

8.2 Operating instructions for the additional electric heating rheostat system

Never start the system if the tank is not full of water. Doing so may damage the electric components.
Operating the electric system is done through the control panel controls. Figure 2 shows the layout of the control panel. Below we detail its functions:

- **Lit switch.**
  Two positions: Upper part pressed (ON position) and lower part pressed (OFF position).

- ON
The resistor will heat the water up to the temperature set on the thermostat (usually 60ºC). During the heating process the pilot light is on. When the water reaches the set temperature on the thermostat, it will turn off the resistor and the pilot light, and turning on again when the water temperature decreases (which occurs when hot water is consumed).

- OFF
In this position the resistor is deactivated. The water temperature will decrease as hot water is consumed.

- **Thermostat**
  This is used to set the temperature at which the electric resistor will heat the deposit's water. The common temperature is 60º C.

- **Thermometer**
  This indicates the water temperature within the tank.

- **Safety thermostat**
  This is used to prevent anomalous water heating which could occur due to a thermostat failure. The safety thermostat temperature shuts off the resistor's circuit if the water reaches 110º C.

  You can check to see if the safety thermostat has tripped by removing the small plastic cover. The safety thermostat has tripped if you see a small red button jutting out from the safety thermostat's body. If this is the case, disconnect the electric system from the mains and immediately call your technical service. Beware if you use the hot water in these conditions, since it is possible that it runs at a much higher temperature than usual and could be a burning hazard.

  To operate the electric heating system, set the thermostat at the desired temperature (60º C) and place the switch in the ON position.

  As a precautionary measure, never operate the electric control panel if the area's floor is wet (ex. a bathroom after a shower), since there is a risk of an electric shock, just like with any other electric device.

  When disconnecting the device, do so by pulling on the plug, never the cord.

9. Guarantee Atlantic Boile

Atlantic Boilers guarantees the water heater against corrosion for 6 years, only as long as points 3, 4 and 5 in this manual have been performed properly and when the water used complies with tap water standards.

Atlantic Boilers guarantees this devices electric resistor against corrosion for 2 years, as long as the previously mentioned requisites are fulfilled relative to the installation and water quality. If the electric panel has been modified, it is automatically exempt from a guarantee, since they are pre-installed so that the user must only plug it in, without having to modify/manipulate it.

Each device comes with a guarantee card which must be stamped by the distributor, then send the factory the corresponding section and file the user's section along with the purchase invoice throughout the guarantee period.

With this document the user may read all the cases in which the device is not covered by the guarantee.

Each device also comes with a Conformity Certificate and Pressure Certificate, which can be requested from the distributor.

Non-reception of the form copy properly filled-in, or if the device does not have its corresponding factory specification's plate, the guarantee is void.

CE

UNE-EN 13445:2002

Attention users in European Union private households

This marking on the product or on its packaging illustrates that, under European Directive 208/2005 governing used electronic appliances, this product may be disposed of with normal household waste. You are responsible for disposal of this equipment through a designated waste electrical and electronic equipment collection. To determine the locations for dropping off such waste electrical and electronic, contact your local government office, the waste disposal organization that serves your household or the store at which you purchased the product.

GUARANTEE

GENERAL CONDITIONS OF THE CERTIFIED OF GUARANTEE

This group is manufactured with materials of discharge quality and technology and ha ve been revised specialized for our technicians. D. COBALLES guarantee for 6 YEARS for all the parts in stainless steel and 2 YEARS for the electric components, included the inmersion heater and the pocket, starting from the date of sale, commiting to repair or restore the piece f oreseen like reserve, whose break is alw ays, to judgement of D. COBALLES, a technical f ailure not der ived of their use , excepting the mater ials of discharge precision.

During the period of guarantee the pieces will be completely gratuitous, without the change of any of them, prolong the duration of the same.

The pieces used f or the installation of the group will be brass or stainless steel, never iron.

The guarantee will remain annulled, to judgement of our technical depar tment, like consequence of the incorrect installation of the appar atus, for abuse or inadequate use of the same , as well as for intervention of personnel unaware of our technical author ized service and for the use of replacements and accesories not original or not recommended by D. COBALLES.

In order to be entitled to the certificate of guarantee and of technical attendance, will be in being able to from D. COBALLES the copy of this guarantee, like maximum in the ter m of eight days later of the date of sale that figures in the same.

The not reception of the cop y properly executed will prevent from having a r ight to the guarantee.

All the groups leave from the factory with the badge of corresponding characteristics, for which those that they don't ha ve the placed badge , they will remain exclude you of all right to the guarantee.

In case of taking place any incidence caused by the line, the maker will determine if the concentration of the same enters inside the established margins so that cover the guarantee.

Is indispensable accompany this certificate together with the damaged group.

¡¡¡ IMPORTANT !!!

1.- Installing valves of security necessarily.
2.- The maker is not made any responsible for damage or damage due to an excess of pressure or temperature.
3.- Keeping in mind the indications of the instructions manual.

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