PRODUCT MANUAL
TR200009.r7

ADVECO
HOT WATER SPECIALISTS

Stainless Steel Range

SSB, SSI, and SST

Installation, Operation, and Maintenance Manual

HOT WATER SPECIALISTS

Warnings

This manual should be read and understood prior to installation or operation of any Adveco SSB, SSI or SST stainless steel vessel. Failure to read this manual or follow its printed instructions may lead to personal injury, damage to the vessel and damage to the water heating installation. These instructions should be kept in a safe and accessible place near the vessel.

Vessels should be stored in a safe place prior to installation to prevent damage.

Adveco Ltd. reserves the right to modify specifications in this manual at any time and without notification.

Adveco Ltd. accepts no liability for third party claims arising from unauthorised use and/or use other than as directed within this manual.

How to Use This Manual

All general information, instructions and specifications listed within this manual applies to the full range of SSB, SSI and SST vessels. Any information relevant to only specific SSI or SST vessels is contained within dedicated sections and is clearly identifiable by section titles.

All information unless otherwise stated is applicable to installations in any country. Any information that is relevant to a particular country only is separated and located within clearly marked sections.

For any queries or issues not covered by the scope of this manual, please contact the Adveco Technical Department using the contact details provided on page 28.

Contents

Product Description

Adveco Stainless Steel Cylinders: SSB, SSI, SST

Adveco Stainless Steel Cylinders are a versatile, modular range of domestic hot water vessels that can be fitted with up to two high-capacity stainless steel indirect heating coils or specialised flanges and immersion heaters as required by the application. The range is divided into three types of vessel depending on the number of heat exchange coils included:

Stainless Steel Buffer (hereafter “SSB”) vessels are supplied with two blank flanges and zero heat exchange coils, and primarily serve as buffer vessels only.

Stainless Steel Indirect (hereafter “SSI”) vessels are supplied with one heat exchange coil fitted into the lower flange of the tank, with a blank flange fitted into the top.

Stainless Steel Twin-Coil (hereafter “SST”) vessels are supplied with two heat exchange coils that can either operate independently or be connected together to serve a single high-capacity heat source.

The full range of stainless steel vessels are compatible with direct heating options by the inclusion of the Adveco range of electric immersion heaters.

Two subtypes of the SSB range are also available by substiting one or both standard blank flanges for alternative specialised flanges:

The **Stainless Steel Buffer Electric** (hereafter "SSB-E" or "SSB-E2" depending on the number of electric flanges included) feature one to two electric element mounting flanges, each capable of housing one or two Adveco electric immersion elements. This makes it possible for multiple immersion heaters to be combined with a single tank, resulting in a highly adaptable electric water heater to serve domestic hot water systems.

The **Stainless Steel Buffer Direct** (hereafter "SSB-D") range features a direct vessel connection flange in place of the lowest blank flange, allowing the stainless steel vessel to be used as a buffer with a direct connection to a water heater.

The Technical Drawings located on pages 22-25 can be consulted for a visual reference to the various vessels within the Adveco Stainless Steel Cylinder range.

The Adveco Stainless Steel Cylinder range is designed, manufactured, and tested in the EU to the requirements of:

The Pressure Equipment Directive
EN 12897:2016

The scope of EN 12897:2016 covers indirectly heated, mains pressure storage water heaters, with or without immersion heater backup, up to 1000 litres and 10 bar. The SSB, SSI and SST range of stainless steel vessels up to 1000 litres have been produced to the requirements of this standard.

Vessels with storage capacities of 1000 litres and greater have been designed and manufactured within the spirit of this standard, and have been type tested in accordance with section 6.2. Production units in this category are tested to section 6.3. This supports the requirement for sound engineering as prescribed by the Pressure Equipment Directive for vessels covered by Article 3, Paragraph 3.

The full range of stainless steel vessels are WRAS approved products, with approval reference 1605319.

Installation Instructions

1. Responsibilities of the User

Hot water systems pose a potential risk for building occupants regarding temperature and biological risks. It is the responsibility of the building controller to assess the risk to the occupants of scalding or Legionella and put in place suitable steps to protect the occupants.

The risk assessment must be carried out by someone suitably qualified. The following documents offer guidance and assistance on responsibilities:

ACOP L8, 2014
HSG274 Part 2
Health and Safety at Work Act
Workplace (Health, Safety and Welfare) Regulations
HTM 04 01 Part A and B
Building Regulations Part G
BS EN 806 All parts
CEN/TR 16355

And any other standards, laws, guidelines, or rules in force in the location of the installation, past or future, that are current at the time of installation. This installation manual complements these rules and must not be considered to override them in any way.

Following the commissioning of a system and in compliance with the procedures and advice contained within this manual, responsibility lies with the building controller to maintain a safe standard of operation and regular maintenance procedures as required by the risk assessment. This includes ensuring that the unit is not operated at temperatures or pressures in excess of those stated on the vessel data plate. Nor should the vessel be exposed to a full or partial vacuum, such as can be present during draw-off or drainage of the unit while the cold feed or vent are closed or obstructed.

Failure to maintain a minimum of annual maintenance may void any and all warranties. Full maintenance procedures should only be carried out by a suitably qualified person. Basic maintenance regimes, as determined through risk assessment, should be carried out by the user as directed on page 16.

Adveco Ltd. advise that heating systems in unoccupied premises, or that are subjected to long periods of shutdown, should be drained down according to the procedure on page 16, to remove the risk of failure and/or damage occurring while the system is not being monitored.

Installation Instructions

2. Responsibilities of the Installer / Designer

In compliance with the procedures and advice contained within this manual, responsibility lies with the installer to ensure that the vessels are correctly and safely installed in line with all local regulations and laws. In all cases, the relevant laws and regulations take precedence over the instructions contained within this manual.

3. Requirements of the Installation

The SSB, SSI, and SST range of stainless steel vessels are suitable for use with storage or heating of potable water in installations up to a maximum pressure of 6 bar. Any unvented cylinder installation should be notified to Building Control. This is best done through a Competent Persons Scheme by installers holding a valid unvented domestic hot water ticket.

The following documents set out the standards of installation that must be adhered to:

EN 806 All Parts
EN 8558:2015

Note that the installation of any electric heating element requires the use of an earthed power supply.

Installation Instructions

4. Location & Handling

Suitable methods of moving a vessel include the use of a forklift truck where the vessel is securely fixed to a pallet capable of supporting its weight, or by boom crane using adequate textile slings of suitable capacity to lift the weight of the tank. Vessels should not be lifted using the insulation, by chains, or by straps that may damage the insulation, connections, or walls of the tank. Care should be taken when moving or lifting to minimise the risk of damage to the vessel.

The vessel must be located inside the building and positioned on a level base capable of supporting the unit when full. Floor loading calculations should include the total filled weight, being equivalent to the sum of the empty weight of the vessel and the weight of any installed coils or flanges, plus the water volume in litres (where 1 litre of water weighs 1 kg). For tank and coil weights, consult pages 17-20. All vessels include welded feet with fixing holes.

The vessel should be positioned to provide suitable clearances as shown below in figure 1, and should permit access for visual inspection and maintenance of all connections and fittings. Consideration should be given to the inspection, removal and replacement of any flanges, heating coils, immersion heaters, thermostats, and safety valves present, as well as replacement of the entire vessel.

Any water storage vessel requires some provision against damage to surrounding infrastructure, electronics, and equipment in the event of a leak, damage, or vessel failure. Acceptable methods of protection include suitable bunding, gulley, drainage, or a leak detection and warning system.

All tanks are supplied with the insulation jacket already fitted to the vessel. The insulation jacket can be removed if necessary to move the vessel into location, but must be replaced prior to the connection of any pipework.

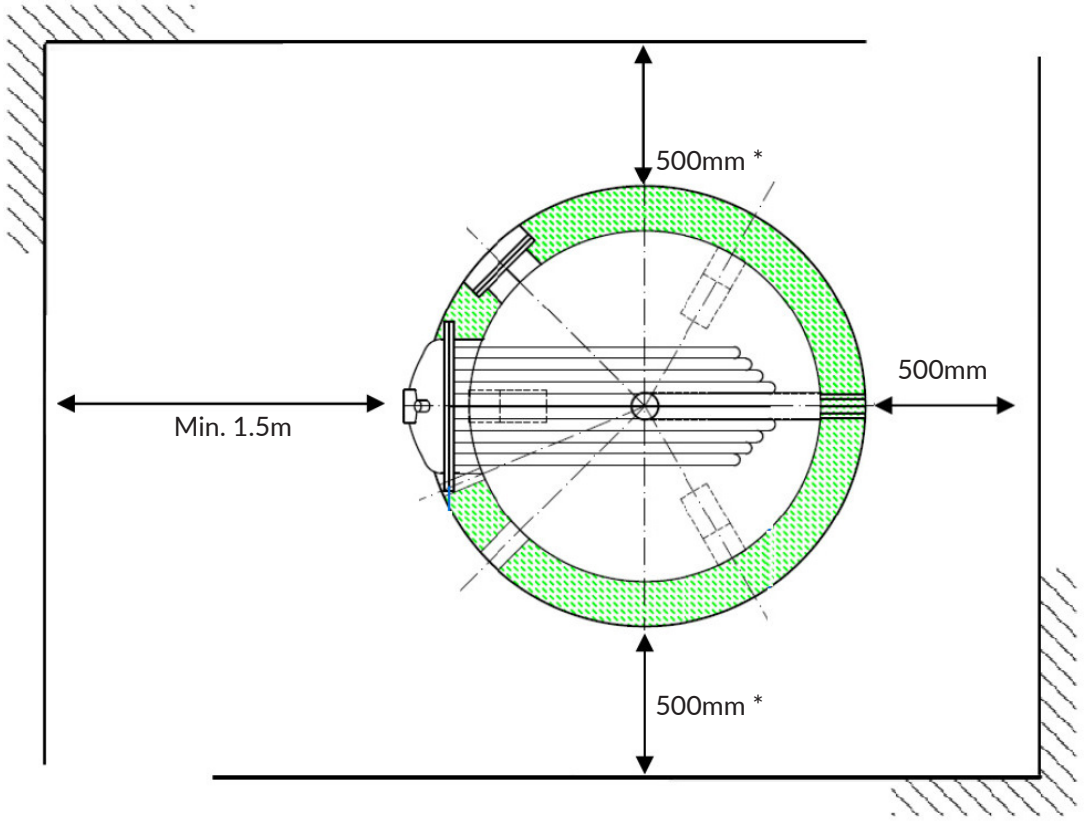


Figure 1: Working Clearances
* Clearances on one side of the vessel may be reduced so long as there is access with suitable clearances to the back or other side of the unit.

Installation Instructions

5. Tank Connections

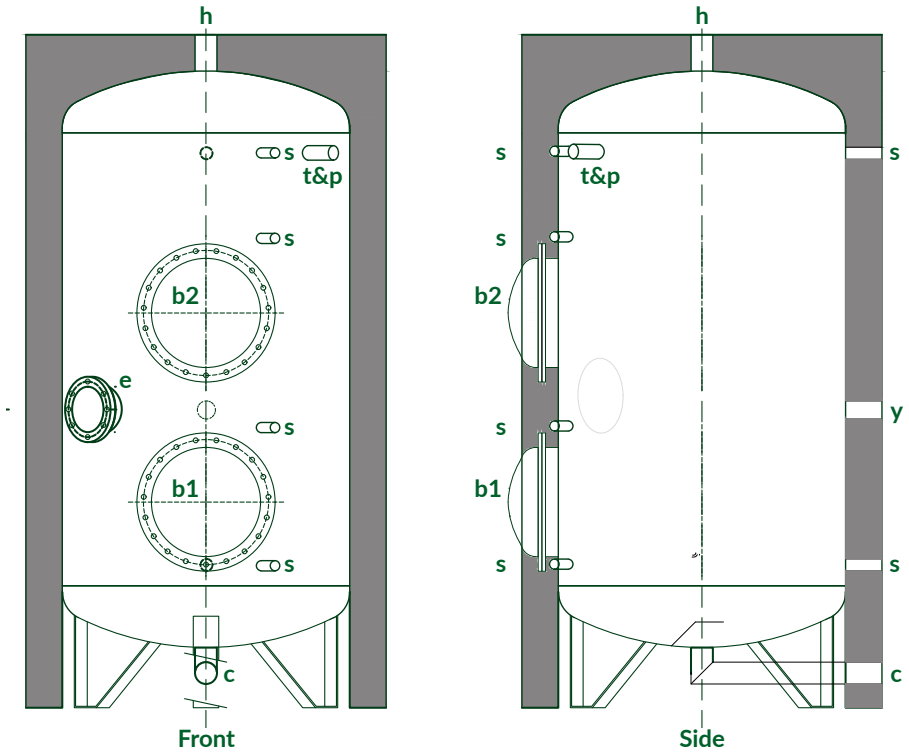


Figure 2: Standard connections and positions for the Adveco stainless steel range.

Connections and sizes

Port	Purpose	Model	200	300	500	800	1000	1500	2000	2500	Units
c	Cold inlet Includes drain connection. Can be used as secondary return connection for SSI tanks, and for SST tanks when coils are combined.		1.25	1.50	1.50	2.00	2.00	2.00	2.00	2.50	inch
h	Hot outlet If used as a preheat, there must be a pressure relief valve after the hot isolation valve.		1.25	1.50	1.50	2.00	2.00	2.00	2.00	2.00	inch
y	Optional secondary return Can be used for SST tanks when the top coil is fed by a boiler, and the bottom coil by renewables.		1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50	inch
s	Sensors and extra connections Coil thermostats, sensors, BMS connections, etc.		0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	inch
e	Coil inspection hatch Can also serve as an optional immersion heater connection		2.25	2.25	180/ 120	180/ 120	180/ 120	180/ 120	180/ 120	180/ 120	inch, mm
t&p	Temp. & pressure relief valve ¾" or 1" dependent upon heat input.		1.00	1.00	1.00	1.00	1.50	1.50	1.50	1.50	inch
b1	Lower flange port For further information on options, please consult pages 18-25.		290/ 220	290/ 220	380/ 300	380/ 300	430/ 350	430/ 350	430/ 350	430/ 350	mm
b2	Upper flange port For further information on options, please consult pages 18-25.		290/ 200	290/ 220	380/ 300	380/ 300	430/ 350	430/ 350	430/ 350	430/ 350	mm

For connection heights and vessel dimensions consult page 17.

Installation Instructions

6. Flanges and Primary Pipework

The stainless steel range of indirect tanks are produced with flanges for up to two removable coils, leading to three distinct product ranges depending on the number of coils installed. The SSB Stainless Steel Buffer range is provided with blank flanges and no coils installed. The SSI Stainless Steel Indirect range is supplied with a single coil mounted in the lower flange, and the SST Stainless Steel Twin-Coil range is provided with coils fitted into both flanges. As a result, the stainless steel range can cater for most hot water applications. The coils fitted within the SST can be used individually for two different heat sources, or can be combined by external, additional pipework (not supplied) to give a larger capacity system. With these combinations the vessel can be used as a preheater, afterheater, buffer or standalone water heating system.

Connections to the vessel should be made according to the locations and sizes denoted on pages 8 and 17. All pipework should be of an appropriate, non-corrosive material, and should be supported outside of the vessel to prevent excessive load bearing upon the tank connection points. Pipework should be arranged to facilitate suitable access to system components.

All flanged connections to the vessel must be tightened in a diametrically opposed sequence to prevent uneven loads across the connection. All flange gaskets must be pasted using a non-toxic silicone based jointing compound suitable for use with hot and cold potable water.

While installing pipework, consideration should be given to removal of the coils for maintenance and cleaning of the tank. Valves and union type fittings are required. A drainage connection should be included downstream of the union fittings.

SST Combined Coils

For larger capacity systems with one heat source, the two heating coils can be combined. The standard way to do this is in series so that the primary flows through the top coil and then through the bottom coil. To estimate the total kW capacity with both coils, based on an 80°C primary temperature, add the kW capacity for the top coil at 80°C to the kW capacity for the bottom coil at 70°C. For technical details on kW capacities at 70°C, on different temperatures, or if a more accurate calculation is required, please contact the Adveco Design Department.

SST Separate Coils

In the case of two heat sources, the lower grade heat or less costly energy source should go into the bottom coil to act as a preheat. The more reliable source of high grade heat (usually a boiler) should be piped into the top coil.

Air Relief

Each coil has a 3/8 inch connection for an air bleed point to commission the coils. Air relief valves are not supplied as standard.

Installation Instructions

7. Secondary Pipework

General

A standard installation will include the stainless steel cylinders as part of a mains-fed system. The pipework should be correctly sized to carry the maximum simultaneous demand of hot water for the building. This may or may not be the same size as the cold feed connection.

All installations must include an anti-vacuum valve to equalise pressure within the tank and prevent damage due to negative pressure during drain-down or draw-off.

Cold Feed

All cold feed pipework must be fitted with safety equipment to prevent overpressure and allow for the expansion of hot water in the system. This must include a check valve and a pressure relief valve set normally to the maximum working pressure of the tank, but no more than 1.5 bar higher than the maximum working pressure in line with the regulations set out in EN 8558 section 4.3.29.1.

All mains-fed systems should additionally include a pressure reducing valve and strainer. The standard kit supplied by Adveco has a variable pressure reducing valve with settings available between 1 bar and 5.5 bar. The domestic hot water pressure must exceed the primary system pressure at all times to protect against contamination of the DHW in the unlikely event of a leak from the coil.

There must not be any type of isolation between the pressure relief valve and the vessel. Safety equipment should be installed at the cold inlet unless otherwise specified.

The cold feed equipment should be supplied as part of an unvented kit by Adveco Ltd., inclusive of an expansion vessel and temperature and pressure relief valve with a pressure setting at least 0.5 bar above the pressure relief valve setting but no more than 1.5 bar higher than the maximum working pressure of the tank, in line with EN 8558 section 4.3.29.1. A 3/4” inch valve is suitable for use with most indirect systems.

The expansion vessel should be calculated to be roughly 5% of the total hot water system volume for systems operating at around 3 bar. Please contact the Adveco Design Department to obtain a full calculation if required, or for high pressure applications. The expansion vessel pressure must be set equal to the cold fill pressure of the system, and must be set with no pressure on the wet side of the membrane. The expansion vessel must be situated on the cold feed pipe. For tanks arranged in series, only one expansion vessel should be used at the beginning of the system. Consideration may be given to flow-through type expansion vessels for systems identified as high risk.

The expansion vessel branch can have a lock shield valve so long as the relief valve is not on the same branch.

For further notes on tank and pipework arrangements, please refer to the technical drawings found on pages 22-25 of this manual.

Installation Instructions

7. Secondary Pipework

Drain

The cold feed is located at the lowest part of the cylinder to meet anti-Legionella requirements. A drain should be installed in the cold feed at the lowest point, before the connection to the cylinder. The drain valve shall be of suitable size to allow draining of the tank in a reasonable amount of time. It is recommended that a 1/4 turn lever valve and plug or cap are used and that the valve size be one size smaller than the cold feed connection size. A suitable drain or gulley should be provided to allow draining of the tank.

Vented Installations:

In case of a vented system the unvented kit can be omitted. From the hot flow there must be an uninterrupted open vent with no valves, of at least 19mm internal diameter, reaching above the water level of the cold water tank and discharging to a safe place (not into the cold tank). It is considered good practice to fit a temperature and pressure relief valve even on a vented system.

Installation Instructions

8. Discharge Pipework

Discharge from relief valves

Diagram 1 **Typical discharge pipe arrangement**

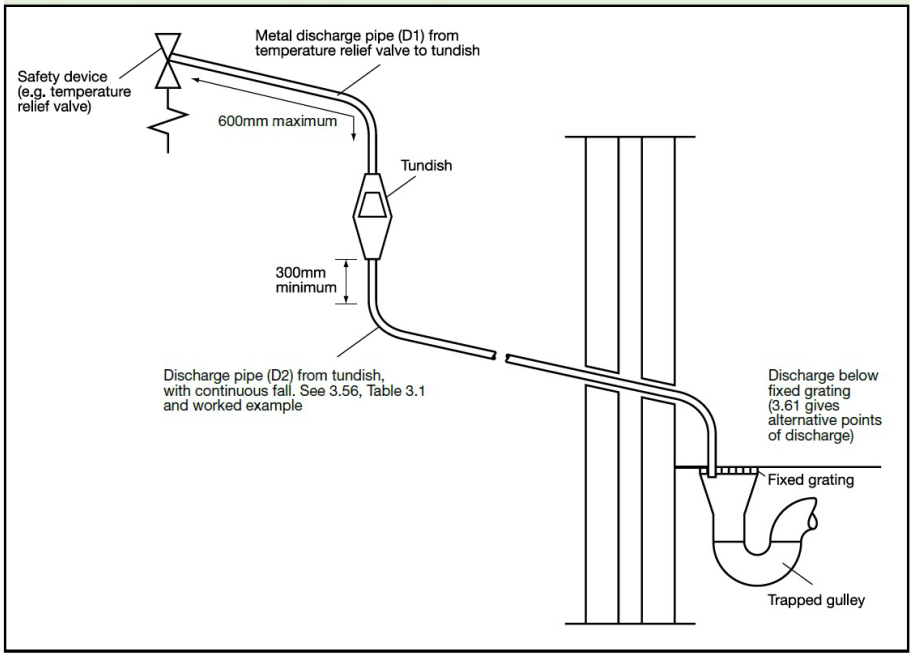


Figure 3: Discharge pipework diagram (as found in Building Regulations Part G).

Discharge pipework requirements for the UK are found in Building Regulation Part G. They are summarised here but it is recommended to read the regulations in full at http://www.planningportal.gov.uk/buildingregulations/approveddocuments/partg/approved

D1, the pipe from the relief valve to the air break, must have the same diameter as the valve, must be metal, and must be no longer than 600mm. An airbreak, such as a tundish or a funnel, must be installed at the end of D1.

D2, the pipe from the air break to termination, must be at least one size larger than D1, must have at least 300mm vertical drop before a bend, and must have a continuous fall. It should typically be metal, but PP is acceptable (note: PP is push-fit plastic. ABS and PVC solvent welded plastics are not suitable).

If D2 is longer than 9m total equivalent length (based on 1.4m per bend), then its diameter must be increased. Please refer to Building Regulation G3 at http://www.planningportal.gov.uk/buildingregulations/ . If a number of D2 pipes are combined, the diameter of the common pipe should be one size larger than the biggest D2 pipe.

D2 should be terminated in one of the following ways:

- Into a soil stack, suitable for the temperature, with a mechanical seal, and with no sanitary appliances on it and a warning not to use the pipe for sanitary appliances.
- Into a trapped gulley with the pipe end below the grate but above the water seal.
- Terminating at low level to a suitable external ground level surface with a guard around the pipe end and that end within 100mm of the ground
- At high level into a suitable hopper or onto a roof that can withstand the temperature and does not have plastic guttering within 3m of the discharge and does not create a risk to people below.

Installation Instructions

9. Secondary Return Pipework

A secondary return is the best way to ensure that there is hot water at the outlets in a short amount of time. In some cases this could be done with trace heating, but the amount of electricity necessary to do this must be considered. In some small systems it is not necessary to use either, and the hot water can flow directly to the taps. The water at the furthest outlet must be 50°C within one minute (55°C in healthcare premises), although this may not be acceptable to all users and a secondary return arrangement should be considered for waiting times of longer than 20 seconds. In all cases, site legionella protection policy takes precedence over this document.

The secondary return pump should be sized to give a suitable flow of hot water around the system to ensure the returning temperature is at least 50°C. The pipework must be insulated. The pump must have a check valve on the positive side of the return pump to prevent cold flow to the hot outlets.

For SSB and SSI vessel applications, the secondary should return into the cold feed of the water heater.

For the SST Twin-Coil range, the secondary should enter the hot water system above any low grade heat sources, just before the final high grade heat source. For a standard indirect water heater installation where both coils are connected together from one heat source, the return should go into the cold feed downstream of the unvented kit / inlet combination safety group. In cases where two heat sources are used, the secondary return should be piped into the centre of the tank.

10. Shunt / Destratification Pump

In installations where the secondary return is piped into the cold feed, it may be considered that all requirements for de-stratification or purging are met. This must be confirmed by site Legionella risk assessment.

In installations without secondary returns, or when it is piped into the centre of the tank, it is advised that the tank is entirely heated to 60°C for at least one hour per day. This should be done with a destratification pump piped from the outlet to the inlet. It should be timed with a clock to run at a low demand period of the day, while the heat source is on, for long enough that the bottom of the tank will achieve 60°C for one hour. In installations with multiple heat sources, a destratification pump should not run permanently.

For buffer vessel applications, the shunt pump between the buffer outlet and the water heater inlet should be timed to be the same as the water heater.

Installation Instructions

11. Multiple Tanks

In case of a multiple tank system the following must be adhered to:

Series Tanks

Series tanks are used in installations as preheaters and afterheaters. A low grade or renewable heat source is used to heat the preheat and the water is transferred to the afterheater, where the additional energy required will top up the temperature. The afterheater is designed to be able to supply the entire load if necessary, and it is always kept up to temperature while the building is occupied.

1. The unvented kit (with an expansion vessel sized for the entire system) or inlet combination group should be installed on the cold feed side of the preheat vessel.
2. The secondary return should be piped into the inlet of the afterheater.
3. A purge pump should be installed from the afterheater outlet to the preheater inlet to allow for thermal disinfection of the preheat. This can be on a timer or on a controls system to heat the preheat to 60°C as often as required by the risk assessment as referenced on page 5.
4. The afterheater must have a temperature and pressure relief valve.
   If it is desirable to be able to drain one tank without affecting the others, an isolation valve can be installed between the two tanks only if another pressure relief valve is installed on the afterheater side of the valve.
   No check valve or expansion vessel should be installed between the preheater and afterheater.

Parallel Tanks

1. All pipework including the secondary return to parallel tanks should be balanced either by pyramid or by reverse return.
2. It is best if each tank has its own unvented kit / inlet combination group to allow for easy servicing of each unit. Consideration should be given to one common pressure reducing valve to ensure equal pressure and flow through each tank.
3. The secondary return should connect into each cold feed.

SSB Buffer Tanks

1. Where a buffer vessel is present, all hot water flow into the building must come from the buffer.
2. The cold feed should connect into the water heater.
3. The output from the water heater should connect into the bottom of the buffer vessel.
4. It is advised to include a shunt pump, from the buffer outlet to the inlet of the water heater.
5. An unvented kit / inlet combination group should be installed on the water heater, with a temperature and pressure relief or inlet combination security group valve on the buffer vessel.
6. The secondary return from the building should pass into the cold feed of the water heater.

Installation Instructions

12. Controls

Every hot water vessel must be fitted with a method of temperature control. This can either be a control thermostat in the tank, a sensor, or a differential control between the tank temperature and the heat source. This must be set to ensure a water temperature of at least 60°C throughout the vessel. The temperature control setting should be subject to a risk assessment in accordance with local building regulations. In most cases, it is recommended to fit thermostatic mixing valves on all outlets for personal use.

The temperature control method should be set to provide a water temperature at outlets of at least 50°C (55°C in healthcare premises) within one minute, and a minimum return temperature of 50°C.

Every vessel that contains a heat source must additionally be fitted with a non-self-resetting overheat thermostat capable of preventing heat entering the tank from all sources, by either stopping the primary flow or by turning off the heat source. Stopping the primary flow may be achieved by a spring-loaded zone valve, or by turning off the pump, providing that thermosyphoning cannot occur.

Time control

It is acceptable to shut off the hot water system if the building is unoccupied for a short period over night or on the weekends. Following a short shutdown, the hot water system must come on long enough before occupation so that it has been up to temperature for at least one hour.
Longer shutdowns must be risk assessed and may require flushing and disinfection before startup.

Frost protection

In normal working operation, the tank is protected against frost because it will be maintained at temperature. In situations where it will be shut down because the building is unoccupied, consideration must be given to freezing of the water within the tank and pipework. This is best dealt with by a frost thermostat (not supplied as standard) in the room to bring on the heat source and secondary pump at 5°C.

Maintenance Operations

Hot water system maintenance should be determined by the building's risk assessment and legionella protection policy. While full maintenance and cleaning of tanks should be carried out by a trained operative, there are regular hot water system maintenance checks that must be carried out more frequently and can be done by the building controller's nominated person. These include monthly checks of the hot water temperature and regular flushing of low use outlets.

The more involved maintenance regime of a tank will vary from site to site depending on water conditions and use. Maintenance must take place at least yearly, but more frequent visits may be required depending on the condition of the unit after one year. The main reason for frequent maintenance is due to scale formation in the tank. Consideration should be given to scale control in hard water areas to reduce descale frequency.

The maintenance of a tank involves checking the system and cleaning the tank.

Checks to carry out:

Temperature is correct and above 60°C.
Return temperature is above 50°C and in line with relevant local regulations.
Furthest outlet temperature is above 50°C (55°C for healthcare) in 60 seconds.
Control stat is calibrated and correctly shuts off heat source.
Overheat stat is functional and stops heat to the tank.
Relief valves operate and discharge correctly.
All valves travel free.
The system has no leaks.
The pressure of any expansion vessel on the cold feed pipework is equal to the cold feed pressure (checked when there is no pressure on the water side of the diaphragm).

Cleaning:

All filters should be cleaned.
The tank should be drained down, cleaned and descaled.
All heater batteries should be descaled.

Drainage Procedure:

Turn off all direct or indirect heat sources connected to the vessel.
Turn off any system pumps and isolate all connections to and from the vessel.
Ensure that the vessel drain connection is connected to, or positioned over, a drain or gulley. For pressurised systems, open the drain valve connection to release the pressure within the vessel.
Open a safety valve or remove an automatic air vent connection on the tank* to allow air into the unit and prevent negative pressure build-up during drainage. Alternatively, ensure there is no isolation between the DHW outlet of the tank and a draw-off point, and open the tap. Allow the water in the pipework to drain, and leave the tap open to allow ingress of air to the vessel.
Allow the vessel to fully drain via the drain valve connection.

*Note that the air vent connections located on the flanges of SSI and SST tanks only connect to the heating coils, not the water cylinder itself.

Note that for SSI and SST vessels, the indirect heating coils may also need to be drained. This should be done via a drainage point included on the primary pipework.

General Specifications

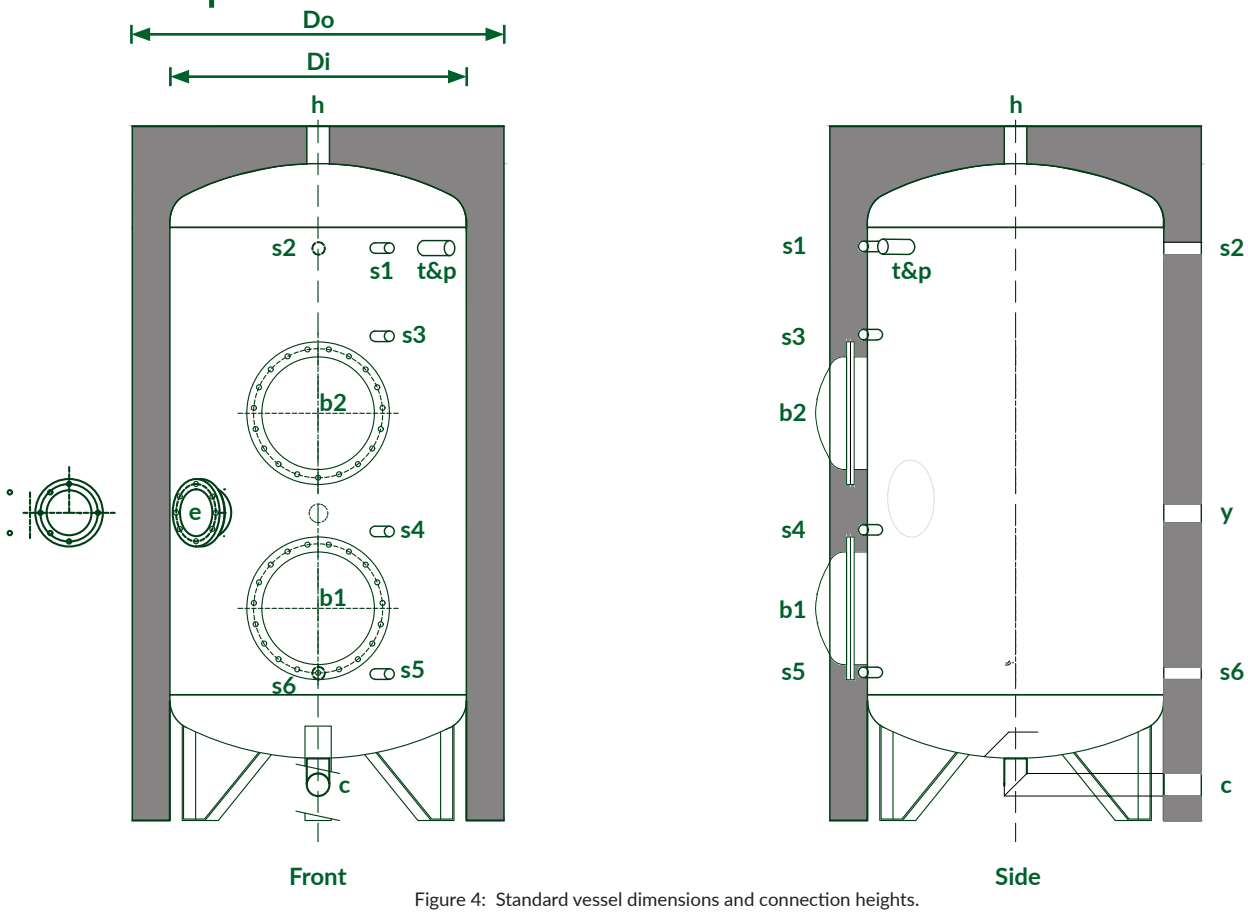


Figure 4: Standard vessel dimensions and connection heights.

Dimensions		Model								
Key	Description	200	300	500	800	1000	1500	2000	2500	Units
Volume	(SSB range only)	191	286	481	763	952	1426	2002	2535	L
D_o	Diameter (Outer)	650	700	850	1050	1050	1260	1510	1660	mm
D_i	Diameter (Inner)	450	500	650	790	790	1000	1250	1400	mm
c	Cold inlet height	60	60	60	60	60	65	60	77	mm
b1	Lower flange height	445	465	485	595	545	620	690	730	mm
e, y	Inspection flange / secondary return height	670	760	725	850	850	915	1015	1050	mm
b2	Upper flange height	875	965	985	1115	1135	1210	1330	1370	mm
h	Vessel and hot outlet heights	1445	1735	1785	1865	2195	2250	2090	2180	mm
t&p, s1, s2	T&P and top sensor connection heights	1190	1450	1480	1515	1835	1830	1620	1645	mm
s3	Sensor connection	1065	1310	1235	1340	1380	1410	1485	1510	mm
s4	Sensor connection	635	700	725	800	800	820	880	920	mm
s5, s6	Sensor connection	290	305	250	380	380	425	485	555	mm
Empty mass (incl. packaging)		79	87	124	159	195	255	330	430	kg
Vessel insulation: Polyester fibre, thermal conductivity λ = 0.036 W/mK, density 17.3 kg/m³, fire resistance EN13501-1 Class B										
Insulation thickness		100	100	100	130	130	130	130	130	mm
Standing losses	W kWh/24h	75 1.80	96 2.30	100 2.41	120 2.88	143 3.43	158 3.79	190 4.56	208 4.99	kWh/24h
Energy efficiency class		C	C	C	C	C	C	C	C	--

Flange Specifications: General

Flange I.D.	Description	Size (mm)	Mass (kg)	Compatible vessels
Adveco C0/300	Blank flange	290	8	SSB 200-300; SSI 200-300; SSBE 200-300
Adveco C1.0/300	1.0m² heating coil	290	14	SSI 200-300; SST 200-300
Adveco C2.25/300	Single 2.25" immersion adapter	290	8	SSBE 200-300; SSBE2 200-300
M0129	Direct 2x 2.5" flange plate	290	10	SSB-D 200-300
Adveco C0/380	Blank flange	380	12	SSB 500-800; SSI 500-800; SSBE 500-800
Adveco C1.5/380	1.5m² heating coil	380	22	SSI 500-800; SST 500-800
Adveco C3.0/380	3.0m² heating coil	380	33	SSI 800; SST 800
Adveco C2.25/380	Twin 2.25" immersion adapter	380	12	SSBE 500-800; SSBE2 500-800
M0130	Direct 2x 3.0" flange plate	380	14	SSB-D 500-800
Adveco C0/430	Blank flange	430	20	SSB 1000-2500; SSI 1000-2500; SSBE 1000-2500
Adveco C4.0/430	4.0m² heating coil	430	44	SSI 1000-2500; SST 1000-2500
Adveco C5.0/430	5.0m² heating coil	430	51	SSI 1000-2500; SST 1000-2500
Adveco C6.0/430	6.0m² heating coil	430	59	SSI 1500-2500; SST 1500-2500
Adveco C2.25/430	Twin 2.25" immersion adapter	430	20	SSBE 1000-2500; SSBE2 1000-2500
M0131	Direct 2x DN80 flange plate	430	24	SSB-D 1000-2500

All flanges and heating coils are constructed from stainless steel.

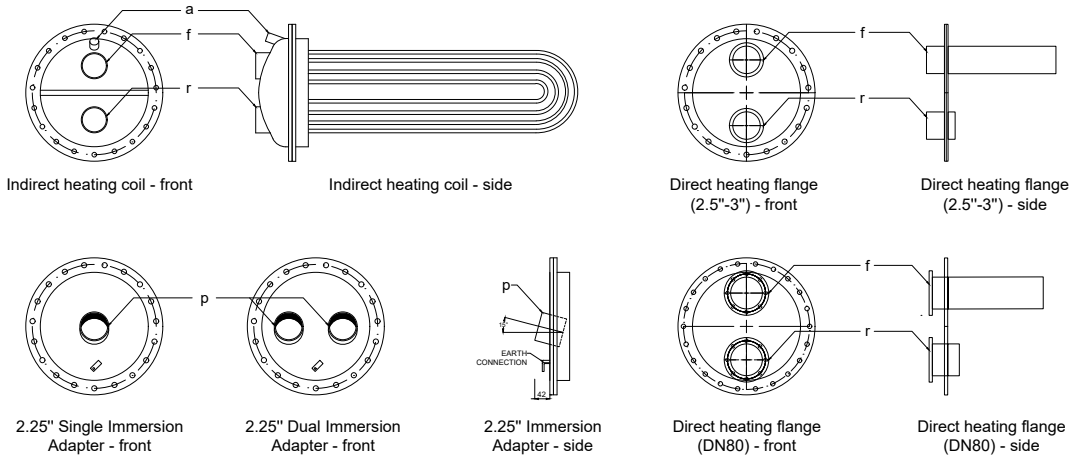
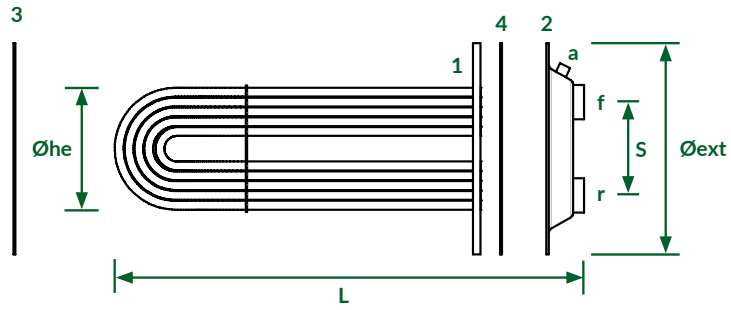


Figure 5: Drawings of available stainless steel flange designs, where:

f:	Flow inlet:	Primary flow connection for indirect coils or direct flanges
r:	Return outlet:	Primary return connection for indirect coils or direct flanges
a:	Heating coil air relief:	Air relief point on heating coils
p:	2.25" immersion heater port:	For use with SSB-E range electric immersion elements

Connections: Flanges		200	300	500	800	1000	1500	2000	2500	Units
Flange outer diameter		290	290	380	380	430	430	430	430	mm
Blank flanges - no connections		n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Indirect heating coils	f: primary flow	1	1	2	2	2	2	2	2	inch
	r: primary return	1	1	2	2	2	2	2	2	inch
	a: coil air relief	⅜	⅜	⅜	⅜	⅜	⅜	⅜	⅜	inch
Direct flanges	f: primary flow	2.5	2.5	3.0	3.0	DN80	DN80	DN80	DN80	inch/mm
	r: primary return	2.5	2.5	3.0	3.0	DN80	DN80	DN80	DN80	inch/mm
Electric flanges	p: immersion ports	1x 2 ¼	1x 2 ¼	2x 2 ¼	2x 2 ¼	2x 2 ¼	2x 2 ¼	2x 2 ¼	2x 2 ¼	inch

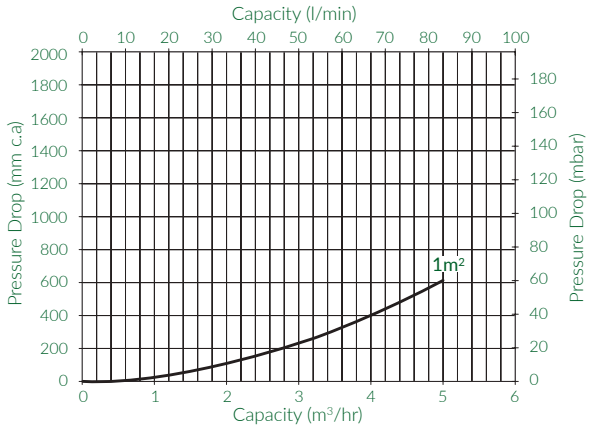
Flange Specifications: SSI and SST Heating Coils

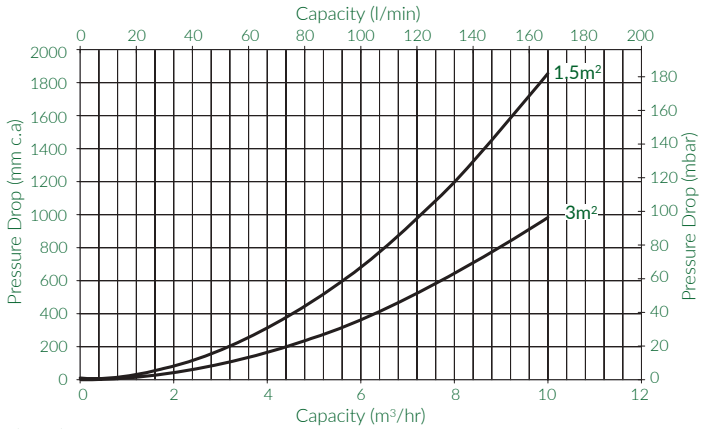


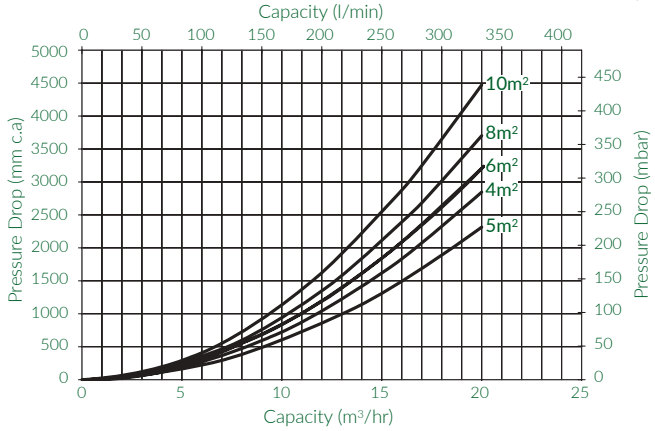
1	2	3	4	f	r	a
Heat exchanger coil bundle	Heat exchanger connection plate	Secondary gasket between coil and tank	Primary gasket with bar for use between coil and connection plate	Primary flow connection	Primary return connection	Coil air relief connection

Coil surface area (m²)	Output capacity (kW)	Volume (l)	Nominal flow rate (l/s)	Nominal pressure drop Δp (mbar)	L (mm)	Øext (mm)	Øhe (mm)	S (mm)
1.0	18	3.2	0.25	3	475	290	202	120
1.5	27	5.3	0.38	5	600	380	270	145
3.0	54	9.8	0.75	8	720	380	278	145
4.0	72	13.2	1.00	10	750	430	316	190
5.0	90	16.6	1.25	19	780	430	324	190
6.0	108	19.2	1.50	25	895	430	324	190
8.0	144	27.0	2.00	50	1250	430	324	190
10.0	180	32.7	2.50	90	1510	430	324	190

Heat exchange coil pressure drops







Further Specifications: SSI and SST (Bottom Coil Only)

Model SSI/SST	200/1.0	300/1.0	500/1.5	800/1.5	800/3.0	1000/5.0	Units
Volume (SSI range only)	188	283	476	758	753	935	L
Volume (SST range only)	184	279	470	752	743	918	L
Nominal primary ΔT	20	20	20	20	20	20	K
Nominal capacity 80°C primary flow	18	18	27	27	54	90	kW
Primary flow rate at 80°C	0.25	0.25	0.38	0.38	0.75	1.25	L/s
DHW recovery	309	309	463	463	927	1544	L/hr
DHW peak half hour flow	279	355	574	799	989	1392	L/hr
DHW peak hour flow	436	512	808	1034	1458	2174	L/hr
DHW peak two hour flow	742	818	1269	1494	2378	3708	L/hr
Coil pressure drop at 80°C primary flow	3	3	5	5	8	19	mbar
Maximum coil pressure	12	12	12	12	12	12	bar
Coil water volume	3.5	3.5	5.0	5.0	10.0	16.7	L
Coil surface area	1.0	1.0	1.5	1.5	3.0	5.0	m^2
Coil flange size	290	290	380	380	380	430	mm

Model SSI/SST	1500/4.0	1500/6.0	2000/4.0	2000/6.0	2500/4.0	2500/6.0	Units
Volume (SSI range only)	1413	1407	1989	1983	2522	2516	L
Volume (SST range only)	1399	1387	1975	1963	2508	2496	L
Nominal primary ΔT	20	20	20	20	20	20	K
Nominal capacity 80°C primary flow	72	108	72	108	72	108	kW
Primary flow rate at 80°C	1.00	1.50	1.00	1.50	1.00	1.50	L/s
DHW recovery	1236	1853	1236	1853	1236	1853	L/hr
DHW peak half hour flow	1645	1898	2106	2359	2532	2785	L/hr
DHW peak hour flow	2271	2836	2732	3297	3158	3724	L/hr
DHW peak two hour flow	3498	4678	3959	5139	4386	5565	L/hr
Coil pressure drop at 80°C primary flow	10	25	10	25	10	25	mbar
Maximum coil pressure	12	12	12	12	12	12	bar
Coil water volume	13.5	20.0	13.5	20.0	13.5	20.0	L
Coil surface area	4.0	6.0	4.0	6.0	4.0	6.0	m^2
Coil flange size	430	430	430	430	430	430	mm

Further Specifications: SST (Top Coil Only and Combined Coils)

Model SST	200/1.0	300/1.0	500/1.5	800/1.5	800/3.0	1000/5.0	Units
Volume (SST range only)	184	279	470	752	743	918	L
Nominal primary ΔT	20	20	20	20	20	20	K
Maximum coil pressure	12	12	12	12	12	12	bar
Coil water volume	2 × 3.5	2 × 3.5	2 × 5	2 × 5	2 × 10	2 × 16.7	L
Coil surface area	2 × 1.0	2 × 1.0	2 × 1.5	2 × 1.5	2 × 3.0	2 × 5.0	m^2
Coil flange size	290	290	380	380	380	430	mm
SST: Top Coil Only							
Nominal capacity at 80°C primary flow	18	18	27	27	54	90	kW
Primary flow rate at 80°C	0.25	0.25	0.38	0.38	0.75	1.25	L/s
DHW recovery	309	309	463	463	927	1544	L/hr
DHW peak half hour flow	221	268	428	569	758	1103	L/hr
DHW peak hour flow	377	425	663	804	1227	1885	L/hr
DHW peak two hour flow	684	732	1123	1264	2148	3419	L/hr
Pressure drop at 80°C primary flow	3	3	5	5	8	19	mbar
SST: Combined Coils							
Nominal capacity at 80°C primary flow	36	36	54	54	108	180	kW
Primary flow rate at 80°C	0.50	0.50	0.75	0.75	1.50	2.50	L/s
DHW recovery	618	618	927	927	1853	3089	L/hr
DHW peak half hour flow	405	481	762	988	1367	2021	L/hr
DHW peak hour flow	717	793	1231	1457	2305	3586	L/hr
DHW peak two hour flow	1331	1407	2152	2378	4147	6655	L/hr
Pressure drop at 80°C primary flow	12	12	20	20	32	76	mbar

Model SST	1500/4.0	1500/6.0	2000/4.0	2000/6.0	2500/4.0	2500/6.0	Units
Volume (SST range only)	1399	1387	1975	1963	2508	2496	L
Nominal primary ΔT	20	20	20	20	20	20	K
Maximum coil pressure	12	12	12	12	12	12	bar
Coil water volume	2 × 13.5	2 × 20	2 × 13.5	2 × 20	2 × 13.5	2 × 20	L
Coil surface area	2 × 4.0	2 × 6.0	2 × 4.0	2 × 6.0	2 × 4.0	2 × 6.0	m^2
Coil flange size	430	430	430	430	430	430	mm
SST: Top Coil Only							
Nominal capacity at 80°C primary flow	72	108	72	108	72	108	kW
Primary flow rate at 80°C	1.00	1.50	1.00	1.50	1.00	1.50	L/s
DHW recovery	1236	1853	1236	1853	1236	1853	L/hr
DHW peak half hour flow	1214	1466	1502	1754	1769	2020	L/hr
DHW peak hour flow	1840	2404	2128	2692	2394	2959	L/hr
DHW peak two hour flow	3068	4246	3356	4534	3622	4800	L/hr
Pressure drop at 80°C primary flow	10	25	10	25	10	25	mbar
SST: Combined Coils							
Nominal capacity at 80°C primary flow	144	216	144	216	144	216	kW
Primary flow rate at 80°C	2.00	3.00	2.00	3.00	2.00	3.00	L/s
DHW recovery	2471	3707	2471	3707	2471	3707	L/hr
DHW peak half hour flow	2149	2654	2610	3115	3036	3541	L/hr
DHW peak hour flow	3400	4531	3861	4992	4287	5418	L/hr
DHW peak two hour flow	5855	8214	6316	8675	6743	9101	L/hr
Pressure drop at 80°C primary flow	40	100	40	100	40	100	mbar

Technical Drawings

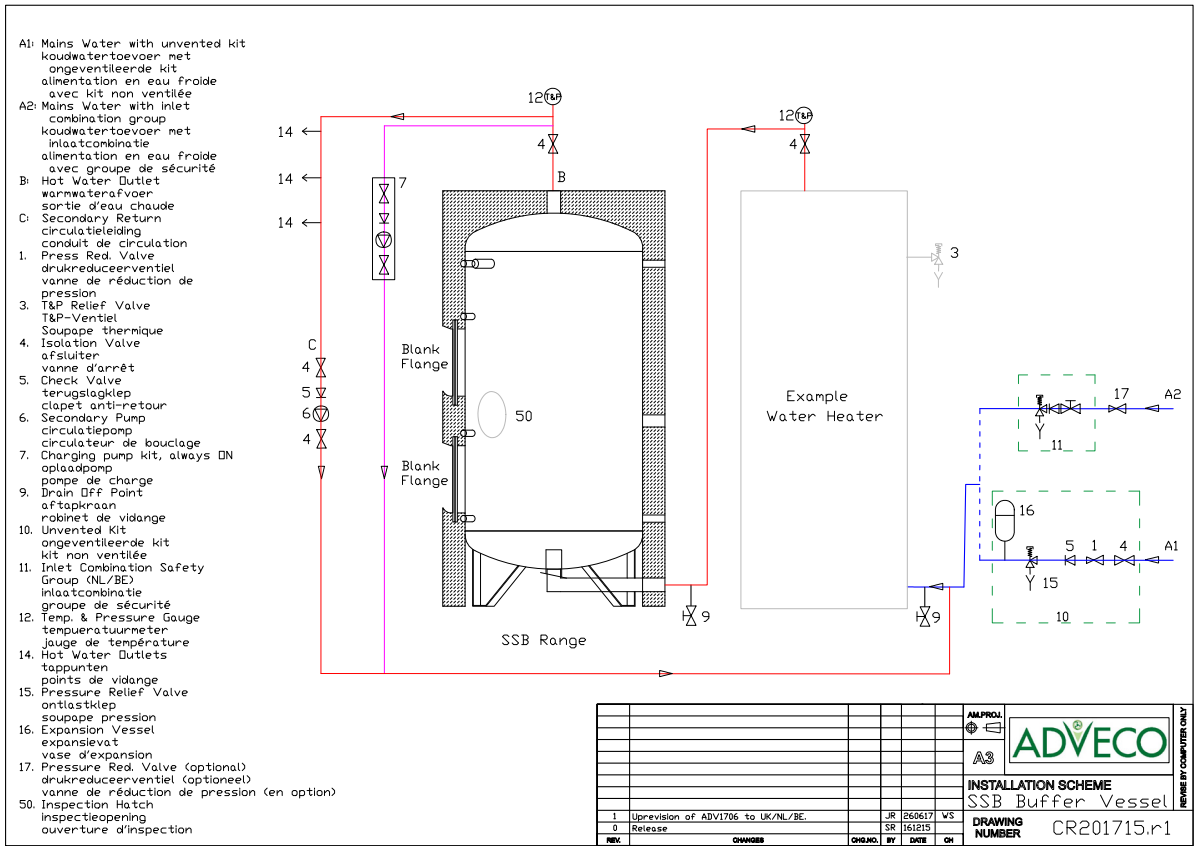
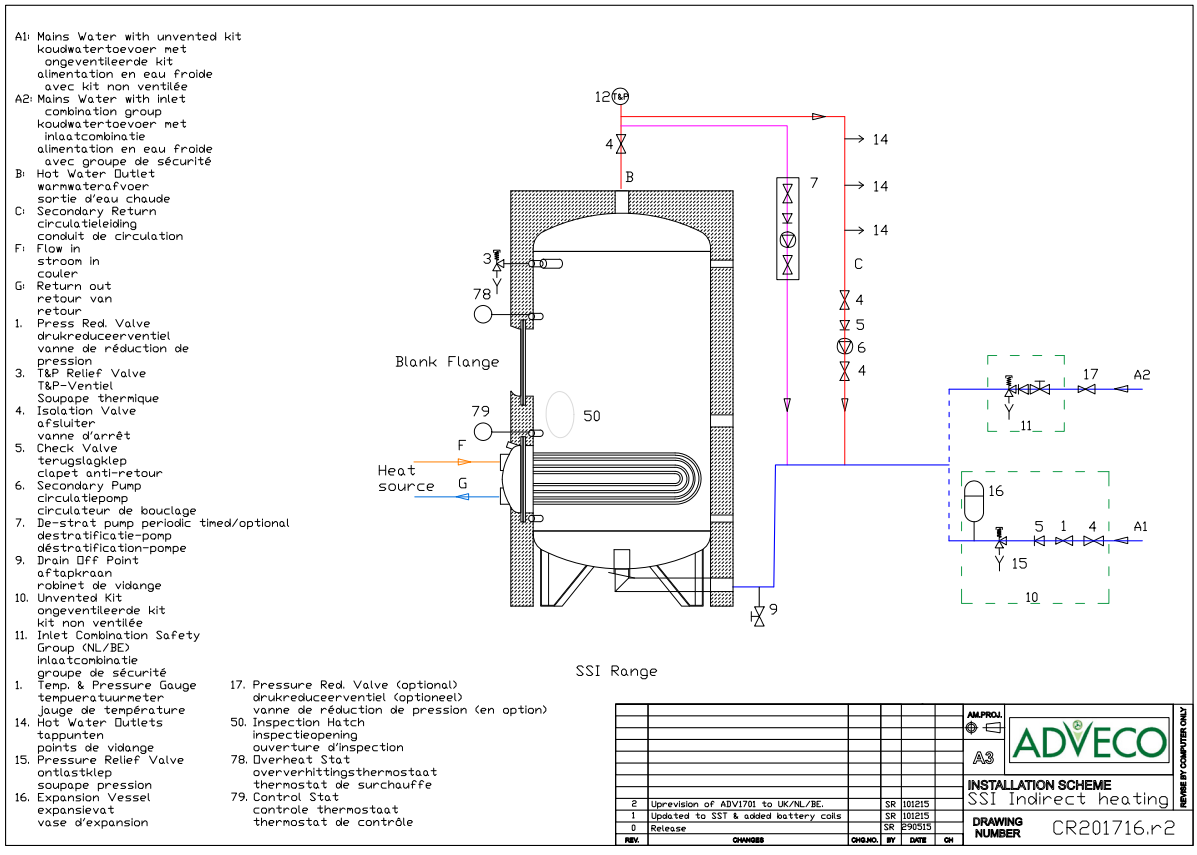


Figure 5 (above): Example system schematic for Adveco SSB vessels. Figure 6 (below): Adveco SSI vessels.



Technical Drawings

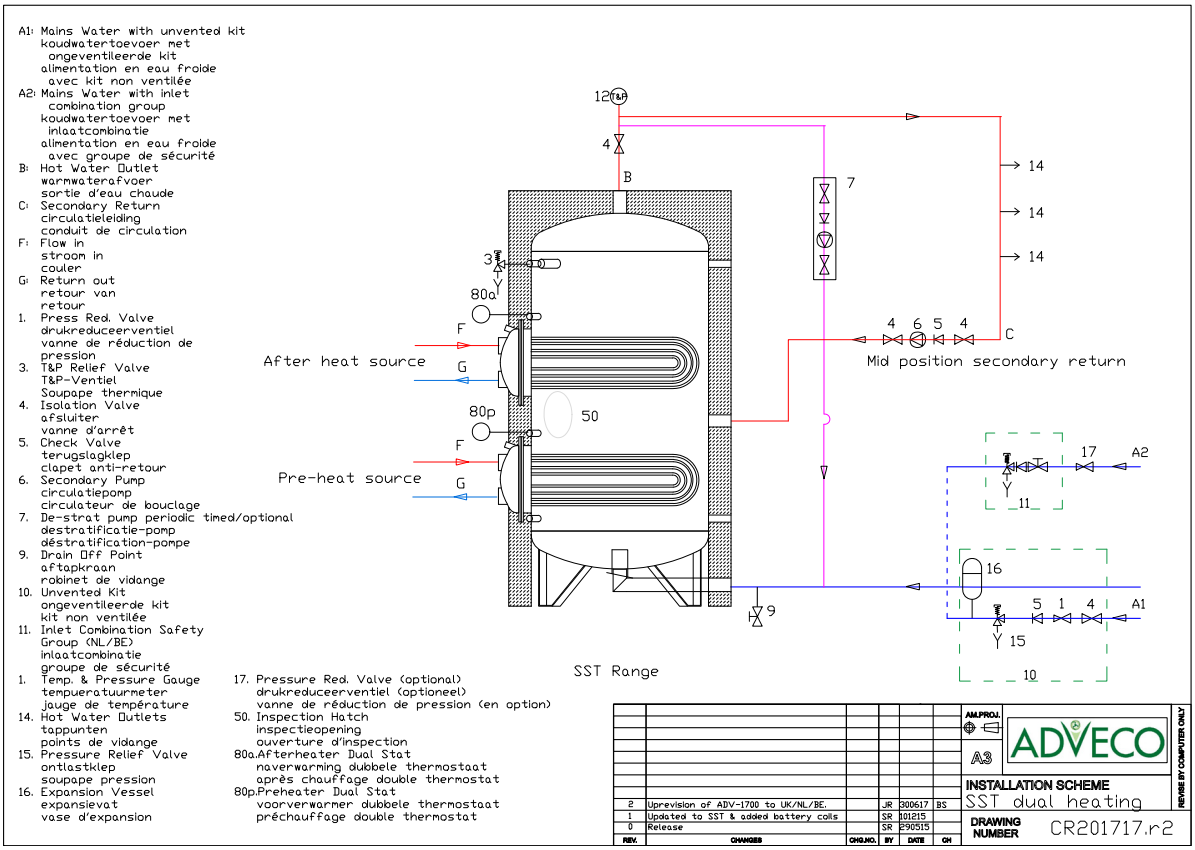
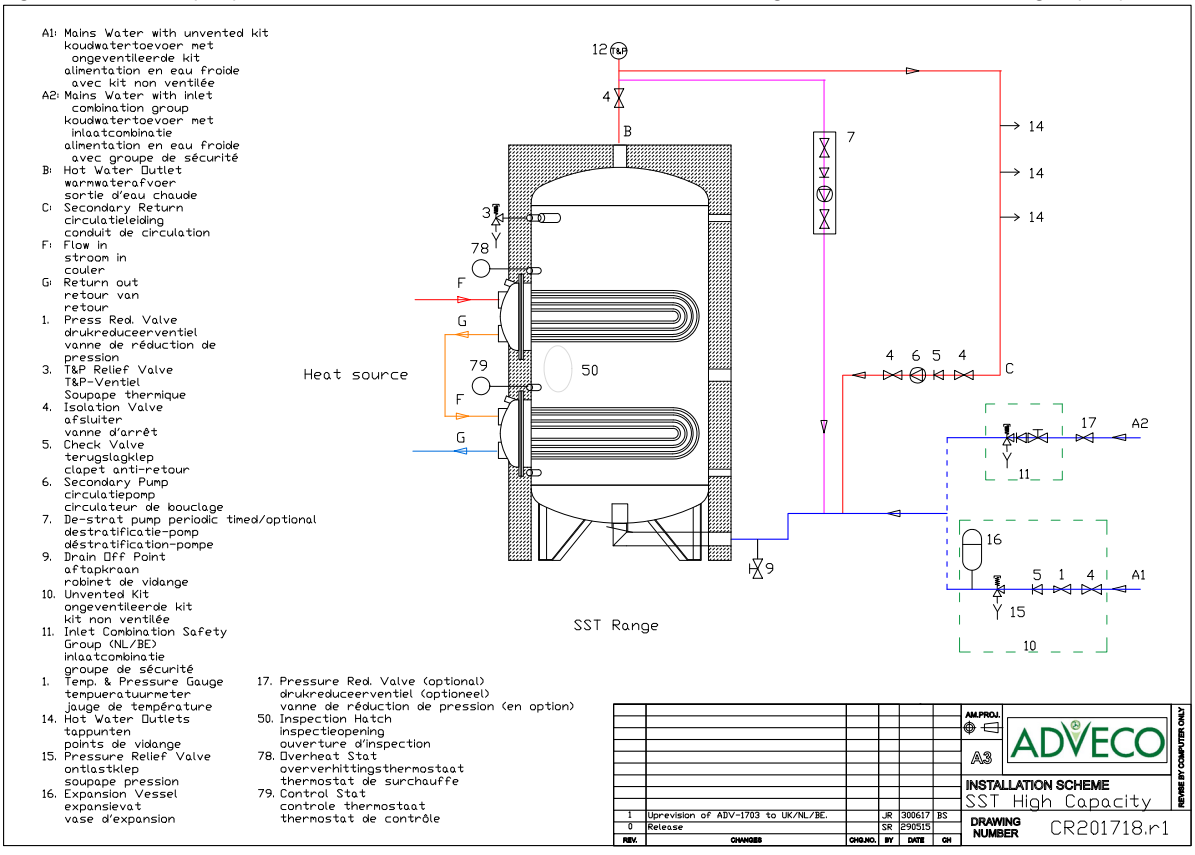


Figure 7 (above): Example system schematic for Adveco SST vessels with two heat sources. Figure 8 (below): SST With one high capacity source.



Technical Drawings

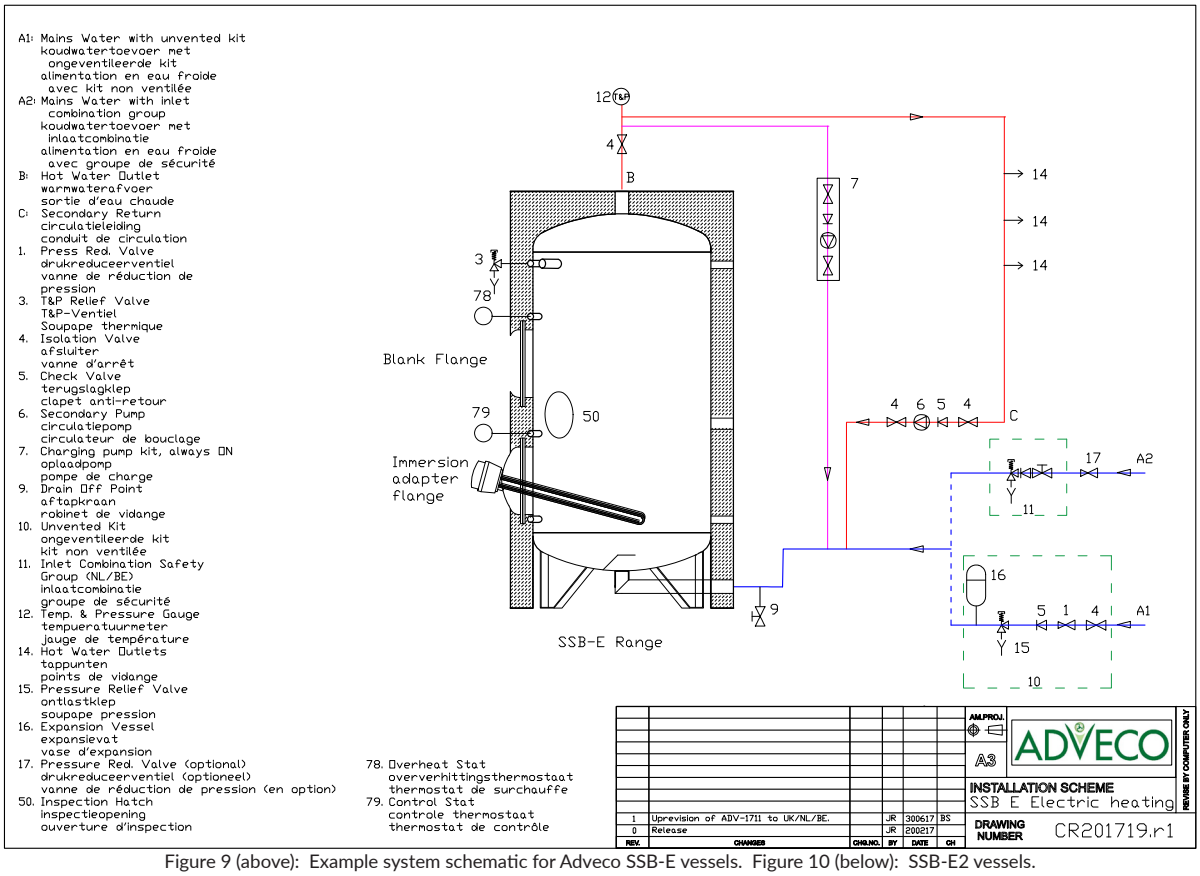
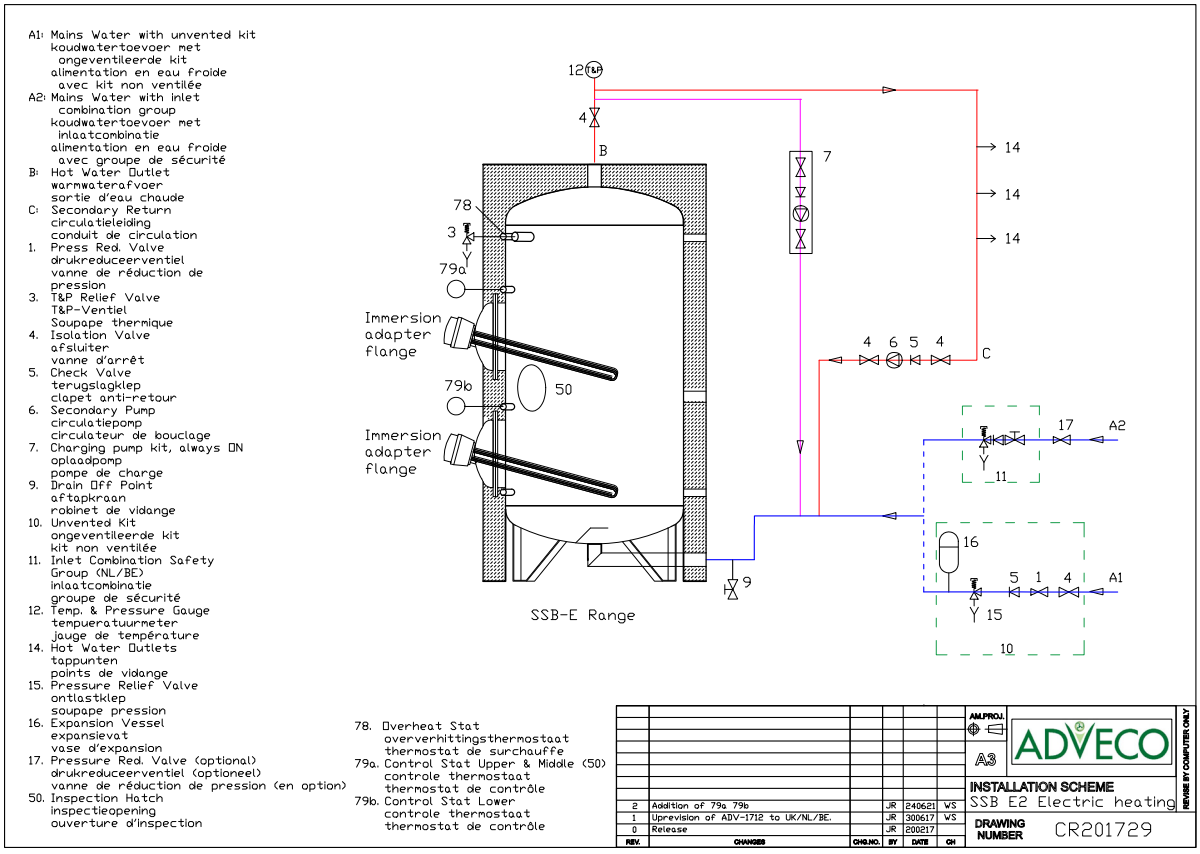


Figure 9 (above): Example system schematic for Adveco SSB-E vessels. Figure 10 (below): SSB-E2 vessels.



Technical Drawings

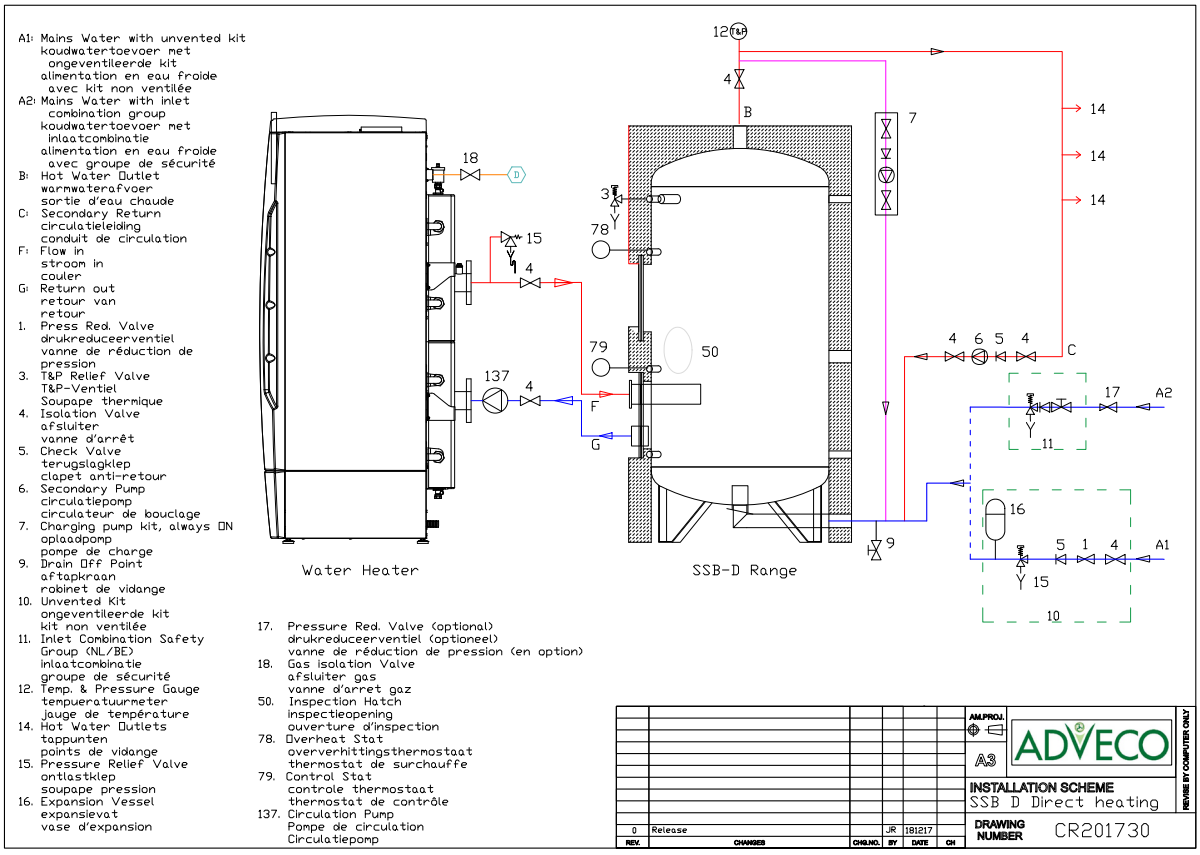


Figure 11: Example system schematic for Adveco SSB-D vessels featuring a direct connection to a generic water heater.

Spares and Ancillary Items

Ancillaries

Item Description	Product Code
Adveco Unvented Kits Wide range of unvented kits available, including expansion vessel and valves. Consult drawings on pages 22-25 for standard components	Please contact Adveco for details
¾" Destratification Pump Kit Includes check and isolation valves suitable for 22 mm pipework	MB0001
Adveco electric immersion heater kits Pre-wired immersion elements supplied with gasket and 180mm stainless steel or brass flanged connection plate. Includes control and overheat thermostats. Contactor not included.	3 kW: 810118K 6 kW: 810119K 9 kW (3ph): 810120K 9 kW (1ph): 810121K 12 kW: 810122K 15 kW: 810123K 18 kW: 810124K 24 kW: EB0019A 36 kW: EB0021A 18/9 kW dual-stage: EB0027
Adveco electric immersion elements 2 ¼" BSP elements supplied with control and overheat thermostats only All immersion heaters are suitable for three phase electrical supplies. E0021 and E0022 are additionally suitable for single phase supplies	3 kW: E0021 6 kW: E0022 9 kW: E0023 12 kW: E0024 15 kW: EB0049 18 kW: EB0050

Spares

Item Description	Product Code
Fibre gasket without beam (inspection flange): 180/130 mm for use with tank models 500 – 2500	810092
Fibre gasket without beam: 290 / 200 mm for use with tank models 200 – 300	910094
Fibre gasket without beam: 380 / 300 mm for use with tank models 500 – 800	910095
Fibre gasket without beam: 430 / 350 mm for use with tank models 1000 – 2500	910096
Fibre gasket with beam: 290 / 220 mm for use with SSI/SST 200 – 300 coil flanges	810089
Fibre gasket with beam: 380 / 300 mm for use with SSI/SST 500 – 800 coil flanges	810090
Fibre gasket with beam: 430 / 350 mm for use with SSI/SST 1000 – 2500 coil flanges	810091
EPDM gasket 180 mm - For use with Adveco EB00## immersion heater kits	E0042.1
Stainless steel flange 180 mm blank - For cleanout cover on tank models 500 – 2500	810072
Stainless steel flange 180 mm with 1x 2.25" connection - For use with Adveco 3-12 kW immersion heater kits	810076
Single sensor pocket long, chrome plated	E0009.2
Multiple sensor pocket 120 mm, stainless steel	E0009.5
Control thermostat 0 - 95°C ½" pocket mount	E0008/0-95C
Control thermostat 30 - 90°C for use within Adveco EB00## backup immersion terminal housing (up to 12 kW)	E0043.1
Overheat thermostat 90°C for use within Adveco EB00## backup immersion terminal housing (up to 12 kW)	E0044
Combined control and manual reset overheat thermostat for use with Adveco EB00## duty immersion heaters Combine with E0009.2 or E0009.5 pockets only.	E0010
Non-self resetting overheat thermostat 95°C capilliary type	E0009
Temperature and pressure gauge, 0 - 120°C. 0 - 6 bar, 80 mm dial ½" self-sealing wet pocket mount	M0011
Machine screw m12 x 40mm hex socket cap stainless steel	M0136

Contact Details & Warranty Information

The Adveco SSB, SSI, SST range, this manual, and all information contained within, are supplied by Adveco Ltd.

UK
Adveco Ltd.
Unit 7&8 Armstrong Mall,
Southwood Business Park,
Farnborough,
Hampshire,
GU14 0NR

T: 01252 551 540
enquiries@adveco.co
www.adveco.co

The Adveco SSB, SSI, SST range is provided with a 5 year vessel warranty. For general terms and conditions please visit www.adveco.co/warranty/

The SSB, SSI, SST range warranty is reliant upon the following conditions:

- The vessel is correctly and safely stored, installed, and used as instructed by this manual.
- The vessel is filled exclusively with potable water with a maximum chloride limit of 60 mg/l
- The domestic hot water system is kept in a good condition and is suitably maintained, inclusive of maintenance of the vessel as directed on page 16 of this manual.
- The vessel has not been altered, tampered with, and has not been subjected to damage from frost, vacuum, or external influence.

Exclusions to warranty conditions include:

- Consequential damage arising from malfunction, failure, or leaks associated with the vessel.
- Failure or damage of the vessel or domestic hot water system arising from the build up of excessive scale.
- Damage arising from water quality and scale, weeps from gaskets or piped connections.
- Any parts and labour charges associated with maintenance, repair, or replacement of the vessel.

For further information and warranty claims, please contact Adveco Ltd. through the address listed above.

Adveco Sales Department
T: 01252 551 540 Option 1
E: Sales@adveco.co

Adveco Spares Department
T: 01252 551 540 Option 3
E: Spares@adveco.co

Adveco Technical Department
T: 01252 551 540 Option 4
E: Technical@adveco.co

Adveco Design Department
T: 01252 551 540 Option 5
E: Technical@adveco.co

Adveco Service & Commissioning Department
T: 01252 551 540 Option 6
E: Service@adveco.co

Adveco also offer the following products and services:

- Bespoke system design
- Maintenance and service packages
- Buffer tanks
- Indirect and direct hot water systems
- Off-site manufacturing of skids and plant rooms
- Controls Systems
- Packaged plate heat exchangers
- Solar thermal systems
- Gas fired heating systems
- Air source heat pump systems

Adveco Ltd. Unit 7&8 Armstrong Mall, Southwood Business Park, Farnborough, Hampshire GU14 0NR
Company Reg : 09493966 T : 01252 551 540 E : enquiries@adveco.co I : www.adveco.co

HOT WATER SPECIALISTS

Appendix A: Product Fiche

In accordance with regulations EU 812/2013 and 814/2013 - Volgens verordeningen EU 812/2013 en 814/2013 - Selon règlements EU 812/2013 et 814/2013.

Category Categorie Catégorie	Trademark Handelsmerk Marque commerciale	Model identifier Typeaanduiding Modèlee	Energy efficiency class Energie-efficiëntieklasse Classe d'efficacité energétique	Standing Losses Staande verliezen Pertes debout	Storage Volume Opslagvolume Volume de stockage	Assembly, installation, or maintenance precautions Voorzorgsmaatregelen tijdens montage, installatie of onderhoud Précautions à prendre pendant l'assemblage, l'installation ou l'entretien
Unit Eenheid / Unité	-	-	-	W	Litres	-
Appliance Information Omschrijving Informations	Adveco Ltd.	SSB200	C	75	191	Consult product installation, operation, and maintenance manual Zie Installatie, Gebruikers en Service handleiding van het product Voir Manuel d'installation, d'emploi et d'entretien du produit
		SSI200/1.0	C		188	
		SST200/1.0	C		184	
		SSB300	C	96	286	
		SSI300/1.0	C		283	
		SST300/1.0	C		279	
		SSB500	C	100	481	
		SSI500/1.5	C		476	
		SST500/1.5	C		470	
		SSB800	C	120	763	
		SSI800/1.5	C		758	
		SSI800/3.0	C		753	
		SST800/1.5	C		752	
		SST800/3.0	C		743	
		SSB1000	C	143	952	
		SSI1000/5.0	C		935	
		SST1000/5.0	C		918	
		SSB1500	C	158	1426	
		SSI1500/4.0	C		1413	
		SSI1500/6.0	C		1407	
		SST1500/4.0	C		1399	
		SST1500/6.0	C		1387	
		SSB2000	C	190	2002	
		SSI2000/4.0	C		1989	
		SSI2000/6.0	C		1983	
		SST2000/4.0	C		1975	
		SST2000/6.0	C		1963	
		SSB2500	C	108	2535	
		SSI2500/4.0	C		2522	
		SSI2500/6.0	C		2516	
		SST2500/4.0	C		2508	
		SST2500/6.0	C		2496	