

# Advenco Thermal Stores

MST 600 - 2000 Range

## Installation, Operation, and Maintenance Manual



PRACTICAL, EFFICIENT & SUSTAINABLE  
BUILDING SERVICES SOLUTIONS

## Warnings

This manual should be read and understood prior to installation or operation of any Adveco MST vessel. Failure to read this manual or follow its printed instructions may lead to personal injury, damage to the vessel and damage to the heating and hot water 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.

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## How to Use This Manual

All general information, instructions and specifications listed within this manual applies to the full range of MST x00, x01 and x02 vessels. Any information relevant to only specific x01 or x02 vessels is contained within dedicated sections and is clearly identifiable by section titles.

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 20.



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# Product Description

## Adveco MST Thermal Storage Vessels with Instantaneous DHW

The Adveco MST range of thermal storage vessels are designed to serve combined heating and domestic hot water installations. They feature a carbon steel shell with high and low level flow and return connections. A high recovery corrugated stainless steel heat exchange coil is mounted in the centre of the tank to supply an instantaneous source of domestic hot water.

An Adveco MST can be used as an indirect water heater or as a preheat vessel. When used as a water heater, consideration must be given to the operating temperatures of the store and the domestic hot water requirement. For further details, please refer to page 14: Controls.

The MST range is divided into three types of tank, based on the number of additional internal heat exchange coils supplied:

**MSTx00** series vessels are supplied with the domestic stainless steel coil only;

**MSTx01** vessels contain one carbon steel heating coil mounted in the lower half of the tank in addition to the standard stainless steel DHW coil;

**MSTx02** vessels contain two carbon steel heat exchange coils, mounted at high and low levels inside the tank, as well as the stainless steel DHW coil.

The complete MST range is designed, manufactured, and tested in the EU to the requirements of:

**The Pressure Equipment Directive  
97/23/EC Article 3, Paragraph 3, Sound Engineering Practice.**

The scope of 97/23/EC covers standards for the design and manufacture of pressure equipment, including vessels, piping, safety and other accessories, with a maximum allowable pressure greater than 0.5 bar. Vessels classified within the Sound Engineering Practice category of the Pressure Equipment Directive are exempt from, and do not feature, CE marking.

The standard range of MST vessels includes the following models, as identified by the vessel data plate:

MST 600	MST 601	MST 602
MST 800	MST 801	MST 802
MST 1000	MST 1001	MST 1002
MST 1500	MST 1501	MST 1502
MST 2000	MST 2001	MST 2002



# 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 MST range of carbon steel thermal storage vessels are suitable for installation in vented or unvented installations up to a maximum pressure of 3 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



# 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. For tank weight information, consult page 17: Technical Specifications. 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 is suitable for indoor installation only and must be 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 plus the water volume in litres of the tank (where 1 litre of water weighs 1 kg).

An installation should provide suitable clearances of no less than 800mm on the two sides of the unit adjacent to the cylinder connections in order to give adequate room for pipework. A height clearance of 150mm is required over the top of the vessel to accommodate the installation of an air vent. The vessel should be positioned to provide suitable access for visual inspection and maintenance of all connections, ancillaries, and fittings, as well as eventual 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.

Additional precautions must be taken when the tank is installed in unheated spaces to prevent the risk of freezing.

All tanks are provided with a 100mm insulation jacket as standard. This can be easily removed via zipper if necessary to manoeuvre the vessel into location, however must be replaced before the cylinder is connected to any pipework.

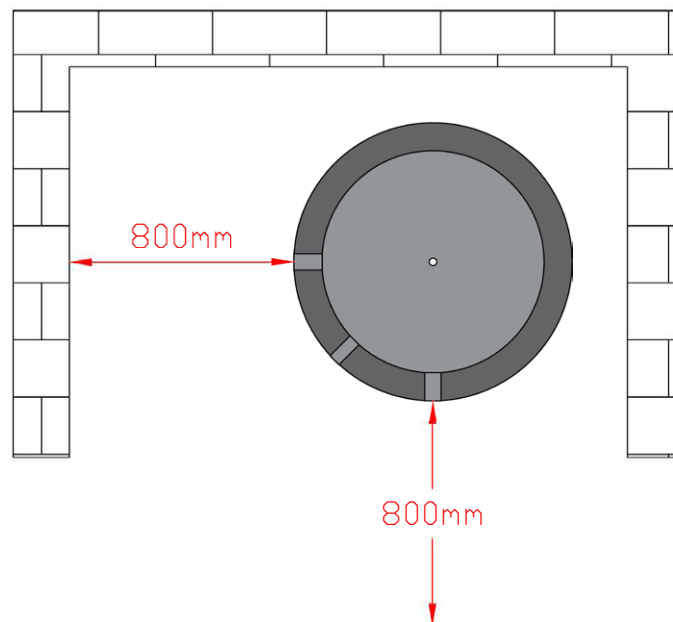


Figure 1: Working Clearances

# Installation Instructions

## 5. Tank Connections: All Vessels

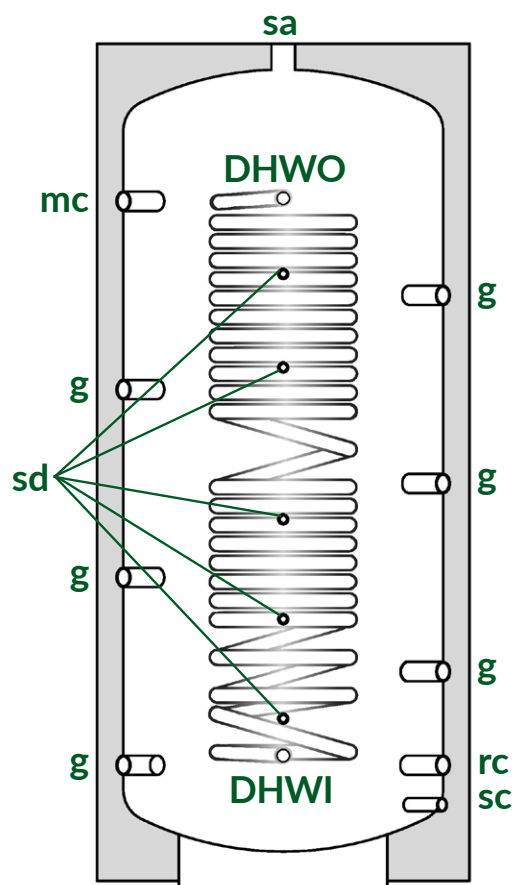


Figure 2: MST general connection positions

Connections		MST	MST	MST	MST	MST	Units
Port	Purpose	600/1/2	800/1/2	1000/1/2	1500/1/2	2000/1/2	
mc	Flow from heat source	1.50	1.50	1.50	1.50	1.50	inch
rc	Return to heat source	1.50	1.50	1.50	1.50	1.50	inch
sc	Drain outlet	1.00	1.00	1.00	1.00	1.00	inch
sa	Automatic air vent	1.00	1.00	1.00	1.00	1.00	inch
sd	Sensors, probes, thermostats	0.50	0.50	0.50	0.50	0.50	inch
g	Extra system connections	1.50	1.50	1.50	1.50	1.50	inch
DHWI	Domestic hot water inlet	1.25	1.25	1.25	1.25	1.25	inch
DHWO	Domestic hot water outlet	1.25	1.25	1.25	1.25	1.25	inch

For connection heights and vessel dimensions consult pages 17-18.



# Installation Instructions

## 6. Tank Connections: x01 and x02 Coils

MST x01 Range

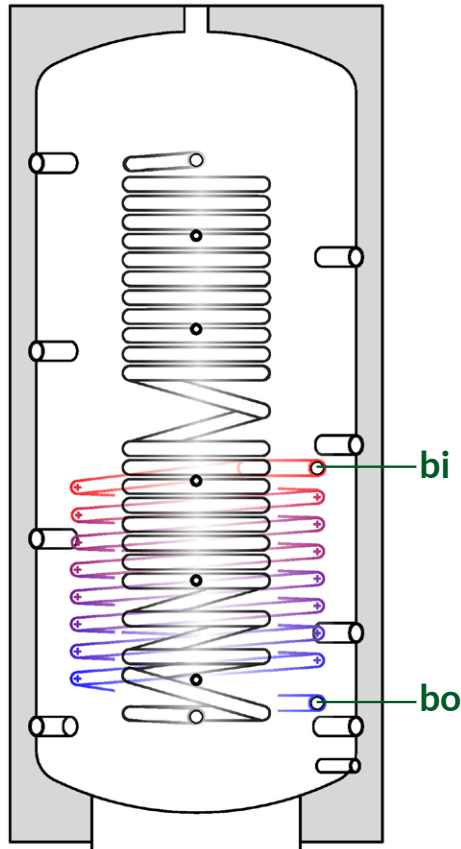


Figure 3: MST x01 coil connection positions

MST x02 Range

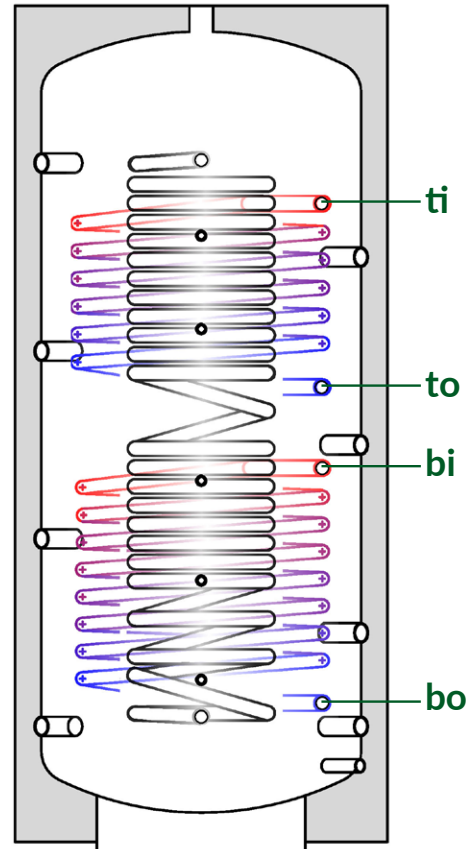


Figure 4: MST x02 coil connection positions

Connections		MST 601	MST 602	MST 801	MST 802	MST 1001	MST 1002	MST 1501	MST 1502	MST 2001	MST 2002	Units
Port	Purpose											
ti	Top coil inlet	n/a	1.00	n/a	1.00	n/a	1.00	n/a	1.00	n/a	1.00	inch
to	Top coil outlet	n/a	1.00	n/a	1.00	n/a	1.00	n/a	1.00	n/a	1.00	inch
bi	Bottom coil inlet	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	inch
bo	Bottom coil outlet	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	inch

For connection heights and vessel dimensions consult pages 17-18.

# Installation Instructions

## 7. Primary Installation Procedure

Prior to the connection of primary pipework and ancillaries, the vessel should first be manoeuvred into its final position in accordance with the guidance on page 7: Location and Handling.

Isolation valves should be fitted to the vessel (except on connections to the vent or any pressure relief valves) prior to installation of any pipework connections. Connections to the vessel should be made according to the locations and sizes denoted on pages 8-9: Tank Connections, and pages 17-18: Technical Specifications. All pipework should be of an appropriate, non-corrosive material, and should be supported outside the vessel to prevent excessive load bearing upon the tank connection points. Pipework should be arranged to facilitate suitable access to system components. Any flanged connections to the vessel must be tightened in a diametrically opposed sequence to prevent uneven loads across the connection.

The MST range requires a top-mounted automatic air vent designed to facilitate the release of air from sealed systems during filling and standard operation. A manual air vent should be installed in addition to this feature. Discharge pipework from pressure relief valves should follow the regulations defined on page 12: Discharge Pipework.

Expansion vessels must be positioned on the return side of a system, and should be appropriately sized to accommodate approximately 5% of the total heating system volume for a system operating at a pressure of 3 bar. The Adveco Application Design Department can provide a detailed expansion calculation upon request to verify the required size of expansion vessels, or for systems operating at different pressures.

A drain should be installed on the lowest connection to the cylinder, as identified on page 8: Tank Connections or Page 17: Technical Specifications. The drain valve should be of suitable size to allow draining of the tank in a reasonable amount of time. It is recommended that a quarter-turn lever valve and plug or cap are used and that the valve size be one size smaller than the return feed connection size. A suitable drain or gulley should be provided to allow safe draining of the tank.

### x02 Vessels

The x02 range of MST vessels feature two separate steel heat exchange coils. When used with two heat sources, the lower grade heat source should be piped into the bottom heating coil, and the higher grade or more reliable heat source should be piped into the top coil. The two coils may alternatively be used as heat outputs, in which case the high level coil should be used for a high temperature output, and the low level coil should be used as a low temperature output.

The two heating coils may be combined for use with a larger capacity system with a single high grade heat source, by connecting the outlet of the top coil to the inlet of the bottom coil by external pipework. To estimate the kW capacity of the combined coil arrangement based for an 80/60°C primary flow and return temperature, sum the kW capacity of the top coil at 80°C and the kW capacity of the bottom coil at 70°C. For further technical details on coil capacities at 70°C, at different temperatures, or if a more accurate calculation is required, please consult the Adveco Application Design Department.



# Installation Instructions

## 8. Secondary Pipework

A standard installation will include the thermal storage vessels as part of an unvented system. The domestic coil 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.

### Cold Feed

The cold feed pipework should include an unvented kit, supplied by Advenco, for all unvented applications. This must include a check valve, pressure relief valve, expansion vessel, and temperature and pressure relief valve. For all mains systems this must also include a pressure reducing valve and strainer.

The temperature and pressure relief valve settings are defined in the Water Supply (Water Fittings) Regulations section 23. The pressure setting should be 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 ¾-inch valve is suitable for use with all MST tanks and should be installed in a T-piece in the DHW hot outlet, and arranged so that the temperature wand sticks into the coil within the tank.

The pressure relief valve can be set to a maximum pressure 0.5 bar above the maximum working pressure of the DHW coil. Further information relating to temperature and pressure relief valve settings can be found in BS 8558:2015 section 4.3.29.2.

The standard unvented kit supplied by Advenco has a variable pressure reducing valve with settings available between 1 bar and 5.5 bar. The minimum pressure is recommended to be over 0.8 bar.

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 Advenco Application Design Department for a full calculation if required. The pressure of the expansion vessel must be set equal to the cold fill pressure of the system. The expansion vessel pressure must be set with no pressure on the wet side of the membrane. In accordance with HSG0274 part 2, the expansion vessel must be situated on the cold feed pipe. For multiple 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.

There cannot be any type of isolation between the pressure relief valve and the vessel. This would be considered *at risk*. The expansion vessel branch can have a lock shield valve as long as the relief valve is not on the same branch.

### 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 in a reasonable amount of time. It is recommended that a ¼-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 safe draining of the tank.

### Vented System

The MST is not suitable for installation within vented systems with a system pressure below 8 bar due to insufficient flow pressure. 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

## 9. Discharge Pipework

### Discharge from relief valves

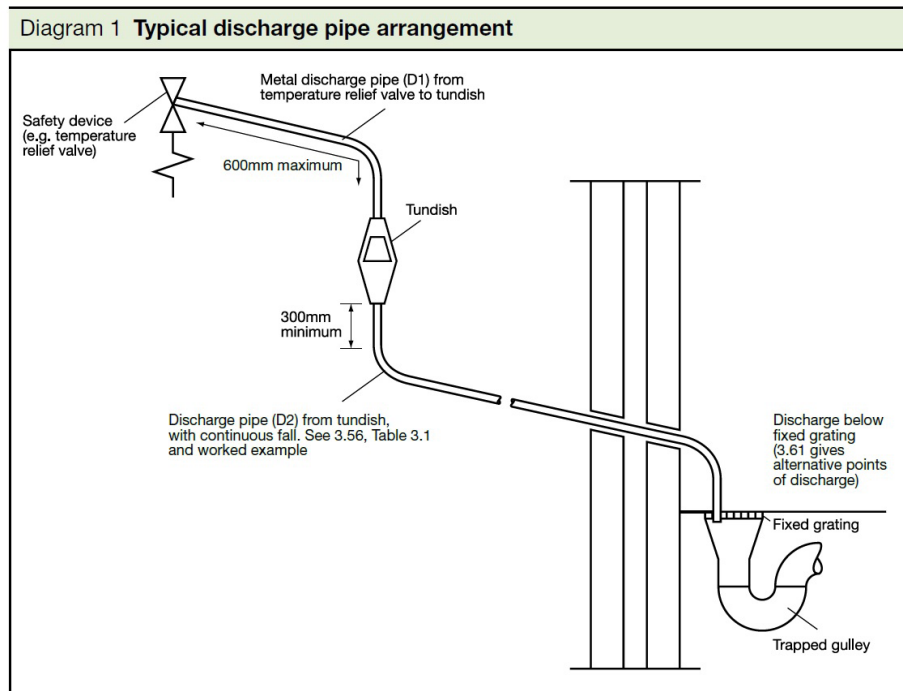


Figure 5: Discharge pipework diagram (as found in Building Regulations Part G)

Discharge pipework requirements for the UK are found in Building Regulations 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

## 10. 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.

The secondary should return into the cold feed of the MST domestic coil connection. Consideration must be given to the temperature control methods to prevent the secondary loop from growing too hot.

# Installation Instructions

## 11. Controls

Every vessel serving domestic hot water must have a method of temperature control and overheat protection. The control and overheat thermostats for the MST range should be installed in the primary thermal storage tank. Control methods can either be a control thermostat or sensor in the central heating thermal storage tank, or a differential control between the tank temperature and the heat source.

When used as a water heater, the water temperature on the domestic side of the system should be controlled to at least 60°C by controlling the thermal store temperature. The minimum outlet temperature is 50°C (55°C in healthcare premises) and the minimum return temperature is 50°C. The risk to users must be assessed and in most cases all outlets for personal use should be limited with thermostatic mixing valves in accordance with the Building Regulations G3.

The amount of domestic hot water that can be drawn from the unit depends on the thermal energy in the tank. The thermal energy held is relative to the temperature of the store. The hotter the stored water, the more hot water can be drawn off. However, the initial draw off from the system will be at the storage temperature for a volume equal to the coil. For tank temperatures over 65°C, consideration must be given to a single large thermostatic mixing valve on the hot water outlet. For tank temperatures over 70°C, the use of a TMV should be considered mandatory.

Every tank that contains a heat source must have a non-self-resetting overheat stat capable of preventing heat entering the tank from all heat sources, either by stopping the primary flow, or by turning off the heat source. Stopping the primary flow could 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 week-ends. 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 of the domestic side of the system before startup.

### Frost protection

During normal working operation, the tank is protected against frost because it is up to 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.



# Installation Instructions

## 12. Water Quality

### Primary:

If the system includes a pressurisation unit, then a water meter is also required.

In order to prevent material corrosion within a central heating installation, the quality of input water must be taken into consideration. All filling water must meet the specifications outlined below. Heating system water that does not meet these specifications should be sufficiently treated to the extent that it does. Failure to comply with water quality requirements may invalidate warranties on any or all components within an MST vessel installation.

- The system should only be filled using potable or softened water. Groundwater and demineralised (demi- or distilled) water should not be used.
- For systems containing aluminium, the water pH level must be between 7.5 and 8.5. The ideal pH is 8.3.
- For mixed-metal systems not containing aluminium, the water pH level should be between 9.0 and 10.0. The ideal pH is 9.8.
- System water should have a maximum conductivity at 20°C of 2500  $\mu\text{S}/\text{cm}$ .
- System water should have a maximum iron content of 0.2 ppm.
- In hard water areas, consideration should be given to filling the system with softened water to prevent scale build-up. Refer to the boiler manufacturer for limits on hardness.
- There must be no capacity for oxygen diffusion into the system during operation.
- The system should be cleared of debris and dirt before use. This can be achieved by installation of a filter, or if this is not possible, by flushing with suitable water. No solid substances or residues should be present in the system water.
- Annual input of fresh water should not exceed 5% of the total system volume. This includes requirements of water input during maintenance, such as the recharging of expansion vessels.
- The addition of chemicals to the water should only be considered after reviewing the boiler manufacturer's technical literature.
- The addition of antifreeze and/or other additives necessitates the need for regular water quality checks, to meet the requirements imposed by the additive supplier(s). Advenco Ltd. recommends that records are kept of any additions to the system water and of water quality checks performed. Further advice on suggested corrosion inhibitors, anti-freeze or system cleaner additives is available by contacting the Advenco Technical Department.

### Secondary:

- Secondary pipework should be cleared of dirt and debris before use by flushing with potable water.
- The DHW system should only be filled using potable water from a mains water connection.
- Input water must comply with all local authority water quality regulations on water for human consumption.

# 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 is regular hot water system maintenance that must be carried out more frequently and can be done by the building controller's nominated person. This includes 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:

DHW supply temperature is correct and above 60°C.

Return temperature is above 50°C.

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.

The DHW expansion vessel pressure is equal to the cold feed pressure (checked when there is no pressure on the water side of the diaphragm). Recharge as appropriate.

The heating system expansion vessel pressure is equal to the heating system pressure. Recharge as appropriate.

All valves have free travel.

The system has no leaks. Particular attention should be paid to tank connections and air relief valves.

The heating system is correctly dosed with inhibitors.

## Cleaning:

All filters should be cleaned.

The tank should be drained down, cleaned and descaled if required.

## Drainage Procedure:

Turn off all 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 gully. For unvented systems, open the drain valve connection to release the pressure within the vessel.

Open a safety valve or remove automatic air vent connection to allow air into the unit and prevent negative pressure build-up during drainage.

Allow the vessel to fully drain via the drain valve connection.

It may also be required to drain any primary and secondary coils within the vessel. This should be done via a drain point located on the primary/secondary pipework as required.





## Technical Specifications: All Vessels

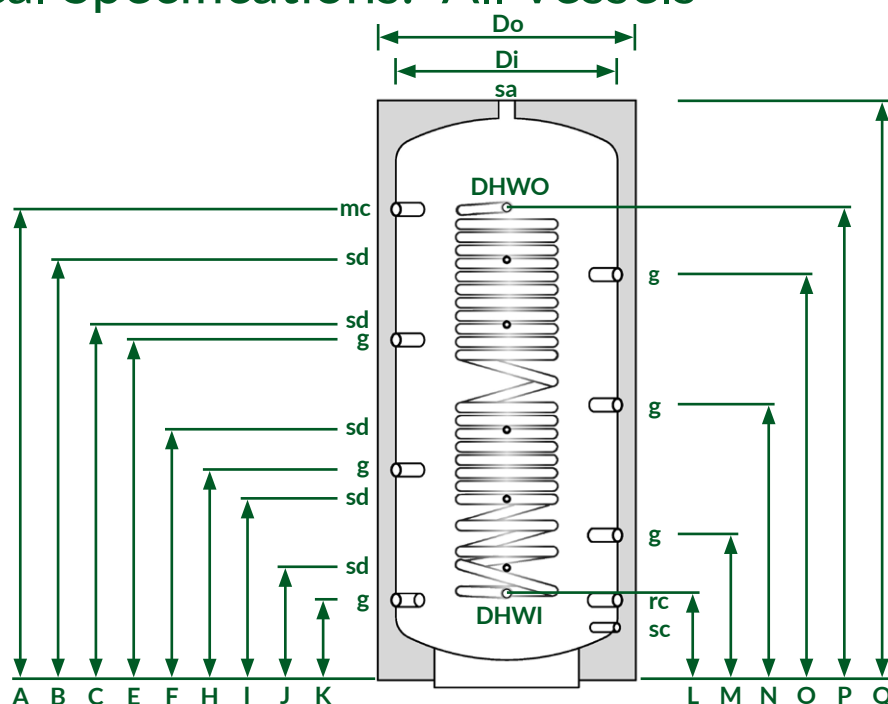


Figure 6: MST general vessel dimensions

### Dimensions

Model	Do	Di	A	B	C	E	F	H	I
MST 600/1/2	900	700	1570	1425	1230	1145	880	715	655
MST 800/1/2	990	790	1550	1450	1150	1115	750	685	570
MST 1000/1/2	990	790	1950	1720	1440	1380	980	815	680
MST 1500/1/2	1100	900	2260	2020	1680	1640	1240	1015	875
MST 2000/1/2	1300	1100	2030	1830	1530	1475	1070	925	840

Model	J	K	L	M	N	O	P	Q
MST 600/1/2	435	290	285	505	930	1355	1575	1900
MST 800/1/2	380	250	270	455	900	1355	1555	1880
MST 1000/1/2	380	250	270	530	1100	1665	1950	2270
MST 1500/1/2	510	380	400	705	1325	1950	2260	2665
MST 2000/1/2	610	380	380	655	1205	2030	2030	2500

All dimensions shown in mm. For connection descriptions and sizes, consult pages 9-10.

### Vessel Specifications

Model	Litres	Maximum working pressure (bar)	Maximum working temperature (°C)	Dry weight (kg)	Std. Losses* (kWh/24h)
MST 600/1/2	565/555/545	3	95	205/220/235	2.86
MST 800/1/2	755/743/730	3	95	210/235/250	3.17
MST 1000/1/2	937/925/912	3	95	238/250/268	3.41
MST 1500/1/2	1433/1412/1395	3	95	330/352/368	5.09
MST 2000/1/2	1952/1919/1898	3	95	378/398/420	5.59

\*Insulation specification: 100 mm flexible polyurethane foam with removeable outer PVC jacket.  
Thermal conductivity  $\lambda = 0.0456 \text{ W/m}^\circ\text{C}$

## Technical Specifications: x01 and x02 Vessels Only

**MST x01 Range**

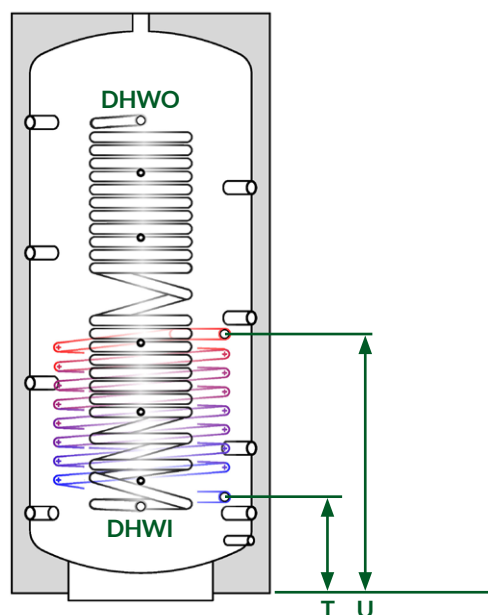


Figure 7: MST x01 coil dimensions

**MST x02 Range**

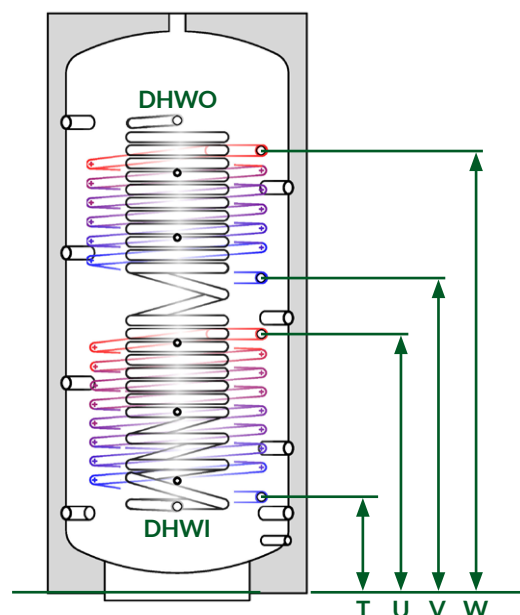


Figure 8: MST x02 coil dimensions

### Dimensions

### Coil surface areas (m<sup>2</sup>)

Model	T (mm)	U (mm)	V (mm)	W (mm)	Domestic coil	Bottom coil (x01 and x02)	Top coil (x02 only)
MST600/1/2	360	760	1120	1520	5.65	1.40	1.40
MST800/1/2	330	750	1060	1480	5.65	1.80	1.80
MST1000/1/2	330	750	1370	1790	6.95	1.80	1.80
MST1500/1/2	460	1260	1590	2190	6.95	3.00	2.40
MST2000/1/2	450	1250	1410	1960	8.00	4.50	3.00

### Coil Specifications

### Steel heating coils

### Stainless steel domestic coils

Surface area (m <sup>2</sup> )	1.40	1.80	2.40	3.00	4.50	5.65	6.95	8.00
Nominal capacity (kW)	14	18	24	30	45	124	153	175
Maximum temperature (°C)	110	110	110	110	110	110	110	110
Maximum pressure (bar)	16	16	16	16	16	6	6	6
Coil volume (l)	9.8	12.6	16.8	20.9	33.5	39.0	48.0	56.0
Coil flow rate (l/s)	0.17	0.22	0.29	0.37	0.55	0.57	0.68	1.08

Steel heating coil data based on 80/60°C primary flow/return temperatures with a 50°C tank temperature  
DHW coil output data based on 80/60°C:10/60°C flow temperatures

## Coil Pressure Losses:

The pressure losses shown in figure 9 below refer to a coil surface area of 1m<sup>2</sup>. These values should be multiplied in accordance with the area of the desired coil, as shown above, to find the associated pressure losses for that coil.

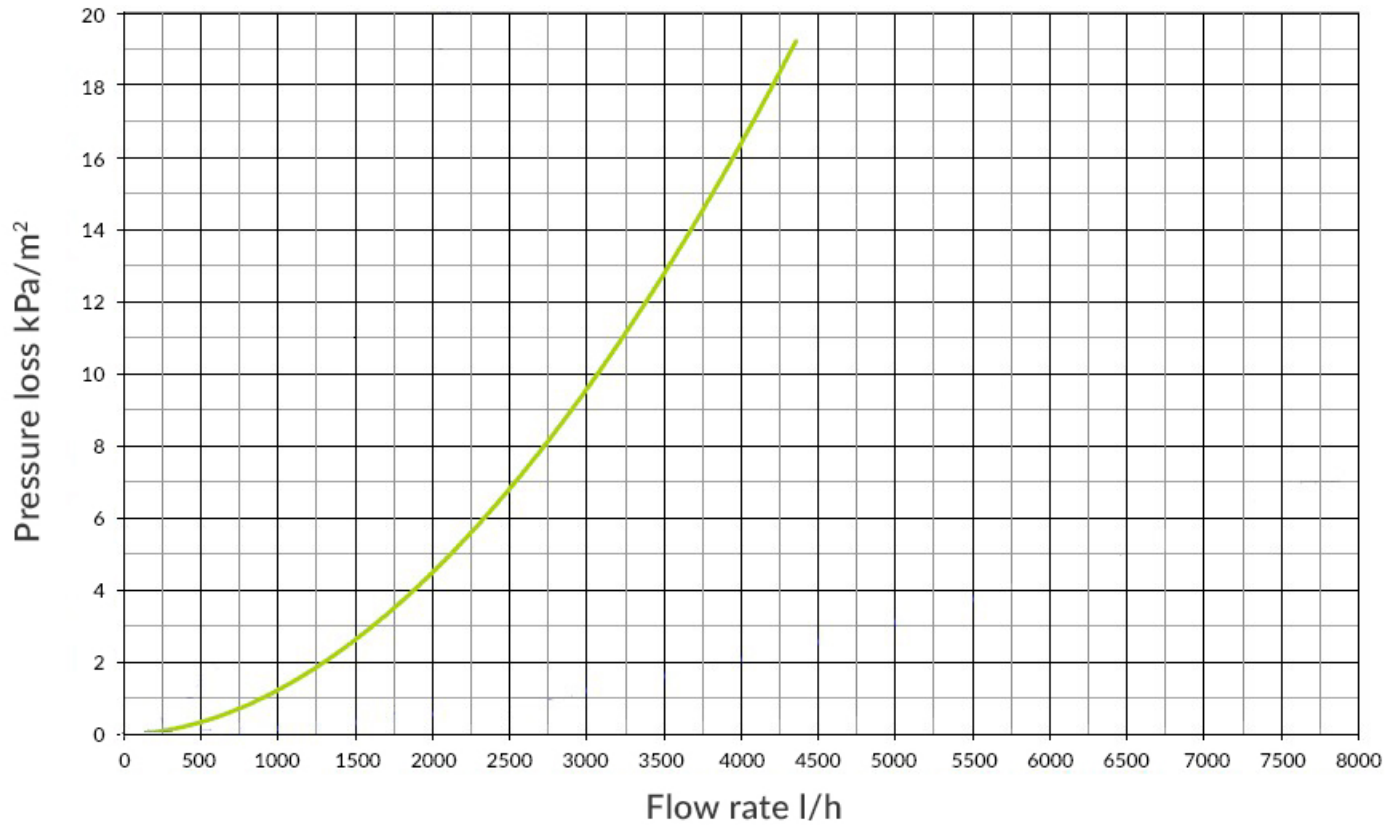


Figure 9: A graph of steel heating coil pressure losses as a function of primary flow rate

# Spares and Ancillaries Information

## Ancillaries

### Item Description

### Product Code

#### Advenco Unvented Kits

Includes expansion vessel and valves. See figure 10 for details. Contact Advenco for detailed sizing and further information.

WUV100/24/E0011X2

#### Buffer Installation Kit

Includes AAV and valves for buffer vessel on primary side; valves and flow measurement device for pump commissioning; 2x T&P gauges for building flow and return.

1.0": MB0017

1.5": MB0018

2.0": MB0019

## Spares

### Item Description

### Product Code

#### Control Thermostat

0-70°C Thermostat supplied with 0.5" pocket

E0008

#### Overheat Thermostat

95°C Thermostat supplied with 0.5" pocket

E0009

95°C Capillary thermostat suitable for multiple pocket

E0011

#### Single Pocket 0.5"

E0009.1

#### Multiple Pocket Long 0.5"

E0009.4

#### Temperature & Pressure Gauge

0-6 bar; 0-120°C; 80 mm dial. Self-sealing 0.5" wet pocket

M0011

#### Automatic Air Vent 0.5"

P0022

Further valves and spares available from Advenco upon request

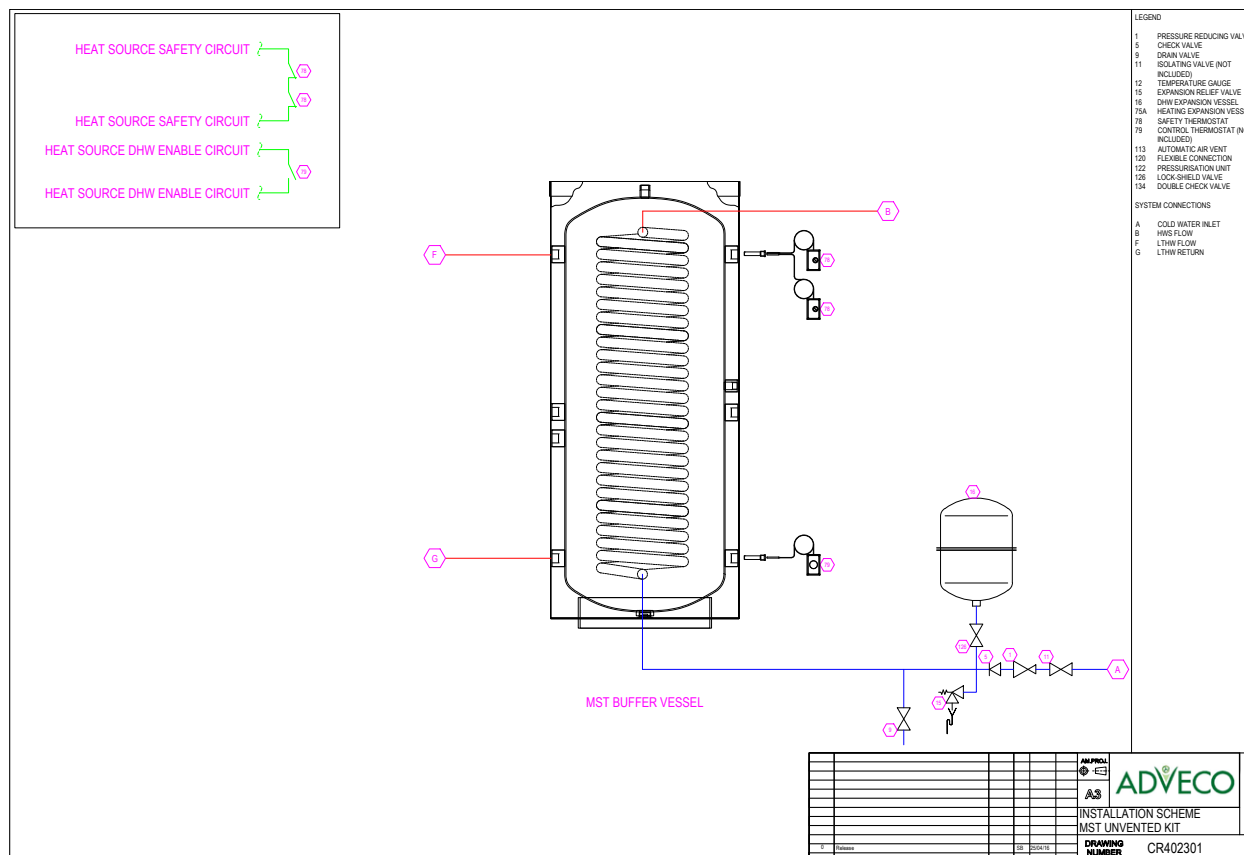


Figure 10: A schematic of the MST Unvented Kit WUV100/24/E0011X2

## Contact Details and Warranty Information

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

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 MST range is provided with a 5 year vessel warranty reliant upon the following conditions:

- The vessel is correctly and safely stored, installed, and used as instructed by this manual.
- The vessel is used exclusively with water that satisfies the quality conditions as described on page 16 of this manual, or an approved glycol solution.
- The heating and 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:

- Consequential damage arising from malfunction, failure, or leaks associated with the MST vessel.
- Failure or damage of the vessel or hot water / heating system arising from the build up of excessive scale.
- 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 details listed on this page.

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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

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## 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
  - Combined heat & power cogeneration systems
- 



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