

Installation, Operation and Maintenance Instructions

Buffer Vessel

OM006



The operating and maintenance instructions contained within this package are for standard buffer vessels (suitable for chilled and heating water). Please note that an electronic version of these instructions is available from our website. Please contact our sales office for further information.

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1.0 Standard Unit Information & Description

The standard range of chilled water buffer vessels range from 230 litres to 9000 litres, however GMS can manufacture to approximately 30,000 litres. These are mostly used in heating and chilled water systems. Other applications may also arise with different water temperatures and materials of construction. A choice of materials of construction is available.

Units with copper -lined steel vessels will always be supplied with an anti-vacuum valve connection. This is an essential safe-guard. Vacuum will damage the thin copper lining.

The General Assembly drawing specific to each unit gives details.

Standard Material Options Schedule	
Shell	Copper (CS) Galvanised Steel (GS) Mild Steel (MS) Stainless Steel (SS) Copper-Lined (CL)
(Other materials on request)	

Vessel Design Data	Shell Side
Maximum Working Pressure	Refer to Vessel Nameplate
Hydraulic Test Pressure	Refer to Vessel Nameplate
Design Code	Refer to Vessel Nameplate

Please refer to our brochure for standard connection and dimensional data.

2.0 PED Information

The standard range of Buffer Vessels are designed in accordance with the requirements of the Pressure Equipment Directive 2014/68/EU. Units classed as SEP in the PED category are not supplied with a CE mark. Units in category 1 and above are CE marked. Appropriate markings and certification is supplied with each unit.

It is the responsibility of the user and/or installer to ensure that the unit is installed and operated safely, in accordance with the instructions supplied within this manual.

3.0 EU Directives

From 26/09/2015 the European Eco-design Directive applies to all Hot Water Storage Vessels up to 2000 L volume sold in the European Economic Area. Additionally the European Energy Labelling Directive applies to all Hot Water Storage Vessels up to 500 L sold in the European Economic Area. To ensure that a vessel meets the legal requirements of these directives we strongly recommend that GMS vessels are bought in their complete form, i.e. with factory fitted insulation. GMS will supply uninsulated vessels, if requested, for site insulation by others. In this case, the installer (not GMS) will be responsible for “completing” the vessel by insulating it and for meeting the requirements of the relevant European Eco-design and Energy Labelling Directives. Please check the general assembly drawing in order to identify if insulation is within GMS Thermal Products Ltd’s scope of supply.

Please refer to the general assembly drawing and EC declaration of conformity in relation to the directives supplied with the unit for details regarding the specific heat loss (if it falls within the directives scope).

4.0 Installation

Lifting & Handling: Use lifting eyes where fitted. Do not lift a vessel using the insulation (if fitted). Straps may crush the insulation. The shell of the vessel may be made of relatively light gauge metal and care should be exercised when handling and moving the unit not to damage the shell. Do not lift the vessel using chains directly in contact with the shell. Do not allow operatives to stand on the vessel

Siting: Unless specifically ordered for outside siting the vessel must be sited indoors. Foundations must be firm and level to prevent settling, pipe strain or distortion of the vessel. Unless specifically ordered differently, the vessel should be installed in a level position. For vessels with inspection openings ensure enough room exists to gain access to the opening.

Installation: Protective covers/plugs may be fitted to connections to protect them in transit. These must be removed prior to use. If a connection is not required seal it appropriately. Check for and remove any foreign material which may have got into the vessel. Pipe-work connected to the vessel should be supported to prevent loads being transmitted to the vessel. Provide for thermal expansion with bends and expansion joints. To avoid corrosion do not use copper pipework with galvanised steel vessel or vice-versa. Fit isolation valves prior to vessel connections to facilitate servicing (NOT TO THE VENT). For flanged connections tighten bolts in a diametrically opposite sequence to load the flanges evenly onto the gasket. For screwed connections use a thread sealant approved for use with potable water by the local water authority. The vent

must not be blocked so, if the vessel may need to be isolated from the vent, fit a 3-way vent valve. Ensure adequate venting for air removal during filling and operation ("sealed" systems should have an auto-air-vent and a manual air vent valve for this). Pressure relief valves should have their outlets piped away to a safe disposal point, preferably via an air-break and Tundish so that discharge is unrestricted and easily visible. Water expansion must be accommodated by separate expansion vessel on the cold feed side (on sealed systems) or via the vent pipe on vented systems. Allowing expanded water back into the cold feed tank on vented systems is not recommended as the resultant warm water will encourage bacterial growth.

5.0 Commissioning and Operation

Do not operate the equipment at pressures or temperatures in excess of those specified on the GMS nameplate attached to the vessel. Do not subject the equipment to conditions of vacuum or partial vacuum. For example partial vacuum can be caused if the cold feed or the vent are restricted during draw off or drain down.

It is assumed here that the secondary pipework is already full of water.

For sealed systems it is assumed here that, the expansion vessel gas pre-charge and any cold water booster set and/or pressure reducing valve is already commissioned and set to the correct pressure.

Start with primary, secondary flow, return and cold feed valves closed and secondary re-circulation pumps off.

Close the drain valve.

For sealed systems ensure auto-air vent is operational

For sealed systems open manual vent valves

For sealed systems open expansion vessel isolation valve

Open the fill connection valve and slowly fill the vessel with cold water.

For sealed systems when water reaches the manual vent valve, close it.

If the cylinder is open vented and shares a vent with other cylinders, connect it to the common vent using the 3-way valve

Carefully open the flow and return valves

Check that all gaskets are effective when the unit is operating - some bolt tightening may be necessary after the unit has been first heated and subsequently from time to time. Following installation and commissioning it is advisable to remove, clean and re-assemble any strainers. All fluids must be drained when the unit is out of operation to prevent freezing or possible corrosion.

6.0 Maintenance

Annual maintenance should include cleaning debris from inside the vessel to comply with guidelines on prevention of legionella bacteria proliferation. Also the site insurers may require annual inspection of the internal shell condition.

To drain the cylinder down

Obtain a complete set of replacement gaskets from GMS Thermal Products Ltd.

It is assumed here that all isolation valves (except drain) are open at the start.

Switch off any secondary system pumps and isolate connections to vessel.

For sealed systems reduce the residual vessel pressure by manually operating the safety valve - some water will come out

For sealed systems open the manual vent valve to allow air in during drain-down

If the vessel is open vented and shares a vent with other vessel(s), isolate it from the common vent using the 3-way valve (it will now vent to atmosphere).

Pipe the drain to a drain point and open the drain valve. Fully drain the vessel.

On some vessels the drain connection is in the side and will not completely drain the very bottom of the vessel. This residual water should be pumped or siphoned out through the inspection opening.

The vessel internal condition can be inspected by removing the inspection cover to allow visual examination

Re-fit new gaskets and re-fill the vessel according to the commissioning instructions above.

If the unit comes with sacrificial anodes, sparge or box baffles etc. please refer to our direct storage cylinder operation and maintenance instructions OM003.

7.0 End of Life Disassembly, Recycling & Disposal

Please consult the general assembly drawing and product data sheets of the supplied unit for specific information regarding the materials used. Dispose of all material responsibly and in accordance with all local regulations. For further information, please contact the GMS Technical Team on 01457 835 700.

8.0 Recommended Spares

The recommended spares for the Buffer Vessel are;

- Inspection Opening Gasket

Please contact our sales department for recommended spares prices and availability.