

INSTALLATION, OPERATION, MAINTENANCE INSTRUCTIONS FOR GMS DIRECT STORAGE CYLINDERS (SECONDARY BUFFER VESSELS)



The operating and maintenance instructions contained within this package are for standard storage cylinders (vessels for use in a secondary system with a separate heat supply). Please refer to separate instructions for calorifiers and indirect cylinders.

Please note that an electronic version of these instructions are available from our website and also on a CD. Please contact our sales office for further information.

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1. Standard Unit Information & Description

The standard range of direct cylinders range from 230 litres to 9000 litres. These are used in systems to store domestic hot water. In the majority of applications the water is heated by a separate plate heat exchanger although the vessel can store water heated by other means. Other applications may also arise with different water temperatures and materials of construction. This manual covers types 'CS', 'CL', 'GS', 'SS' & 'PL' calorifiers.

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

Design Data	Shell Side
Maximum Working Pressure	7.0 BarG
Hydraulic Test Pressure	11.55 BarG
Design Code	BS853 1996 Part 1 Grade A & PED 1999 (SI 1999/2001)
Higher pressures on request	

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

2. PED Information

The standard range of storage calorifiers are designed in accordance with the requirements of the Pressure Equipment Directive 97/23/EC. Units classed as SEP in the PED category are not supplied with a CE mark. Units in category I & II are CE marked and 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, and in accordance with the instructions supplied within this manual. The 'DS' unit is designed for a water medium up to a maximum working temperature of 110°C.

EC DECLARATION OF CONFORMITY

We

Manufacturer Name: GMS Thermal Products Ltd
Address: Riverside Works, Egmont Street
Mossley, OL5 9NE
Country: England

declare, in sole responsibility, that the following equipment

Product: 'DS' Direct Storage Cylinders
Country of Origin: England

are in accordance with the requirements of the Pressure Equipment Directive 97/23/EC

GMS PED Certificate Number: PED-DS-11-05
Date of issue: 4th November 2005

Applicable Design Standards: BS853 1996 Part 1 Grade A OR:
GMS Commercial Standards

Subject products are designed, manufactured and tested according to the appropriate quality control procedures.

Date: 4/11/05
Steve Rawlins
Technical Director
GMS Thermal Products Ltd

Size (Litres)	Fluid Group	PED Category	Module
All Sizes From 230 Litres To 9000 Litres (Refer to brochure for actual capacities)	Chart 4 Group 2 Liquids	SEP	A

3. 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.

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 calorifier 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 (NOT TO THE VENT) to facilitate servicing. 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 unit may need to be isolated from the vent, fit a 3-way vent valve. Ensure adequate venting for air removal during filling and operation.

De-stratification Pumpset

To avoid damage in transit the pipe-work and pump of a de-stratification set (if included) may be supplied loose for fitting on site. The pump should be installed to circulate water from the top of the cylinder to the bottom. To ensure that the anti-stratification pump does not adversely affect performance of the calorifier during peak demand periods the power supply to the pump should be timed to come on during periods of low demand if possible, but often enough to guarantee heating the calorifier contents fully for a period of at least 1 hour per day. The unit should be flushed thoroughly with clean water prior to operation.

4. Commissioning & Operation

Do not operate the equipment at pressures or temperatures in excess of those specified on the nameplate of the vessel marking. Do not subject the equipment to conditions of vacuum or partial vacuum. This is particularly vital for copper-lined steel vessels, which are supplied complete with anti-vacuum valve - which must not be removed. For example partial vacuum can be caused if the system connections or the vent are restricted during draw off or drain down.

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

Carefully open the system connections' valves

Check that all gaskets are effective when the unit is operating - some bolt tightening may be necessary after the unit has been first pressurised 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.

5. Maintenance

Annual maintenance should include cleaning debris from the base of the calorifier to comply with guidelines on prevention of legionella bacteria proliferation. Also the site insurers may require annual inspection of tube bundle and shell condition.

To drain the vessel 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.

For copper-lined steel vessels, ensure that the anti-vacuum valve is not stuck shut - also ensure that a vent is available at the top of the calorifier of flow area at least one half the flow area of the drain connection. Remove one of the fittings on the top of the calorifier if necessary to achieve this. Partial vacuum, caused by inadequate venting of copper-lined calorifiers during drain-down, will cause damage to the thin copper lining.

If the vessel is open vented and shares a vent with other calorifiers, 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.

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

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

6. Recommended Spares

Please contact our sales department for recommended spares prices and availability. The recommended quantities given are per unit supplied.

Description	Part Ref.	230-550 Litres	600-2000 Litres	2000-9000 Litres	All Copper Lined
Inspection Gasket	RG250-P	1			
Inspection Gasket	RG380-P		1		
Inspection Gasket	RG450-P			1	1