

GMS

Thermal Products Ltd

Installation, Operation and Maintenance Instructions for Electric Flow Heaters



The operating and maintenance instructions contained within this package are for electric flow heaters. Please note that an electronic version of these instructions is available from our website and also on a CD. Please contact our sales office for further information.

Rev	Date	By	Details
Revision Details			

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1.0 Standard Unit Information & Description

GMS flow heaters are used in various applications, their main use being on closed heating systems such as heating radiator circuits or for space heating requirements. They are also ideal for fresh water applications including swimming pool heaters or as a pre-heat or back up for domestic hot water storage calorifiers. They are an ideal back up service for existing boiler plant permitting boilers to be shut down during maintenance programmes or periods of low demand. They can also be used as a “back up” to main boilers during periods of high demand. The range consists of models ranging from 30 kW to 600 kW. Other applications may also arise with different water temperatures and materials of construction. This manual covers types ‘EFHC’, ‘EFHL’, ‘EFHS’, ‘EFHG’ & ‘EFHP’ heaters.

Standard Material Options Schedule	
Shell	Copper (EFHS) Copper-Lined Steel (EFHL) Galvanised Steel (EFHG) Stainless Steel (EFHS) Glass-Lined Steel (EFHP)
(Other materials on request)	

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 electric flow heaters 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.

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3.0 Installation

Lifting: Use lifting eyes where fitted. Do not lift a calorifier using the insulation (if fitted). Straps may crush the insulation.

Siting: Unless specifically ordered for outside siting, the heater must be sited indoors. Foundations must be firm and level to prevent settling, pipe strain or distortion of the calorifier. Unless specifically ordered differently, the calorifier should be installed in a level position. For calorifiers with removable tube bundles, ensure enough room exists to withdraw the bundle from the shell. For calorifiers 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 connections. Pipe-work connected to the calorifier should be supported to prevent loads being transmitted to the calorifier. Provide for thermal expansion with bends and expansion joints. To avoid corrosion, ensure that pipe-work materials are compatible with calorifier materials. Fit isolation valves prior to calorifier connections 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. Ensure that the tube bundle can be isolated and easily disconnected for removal during maintenance. Ensure adequate venting for air removal during filling and operation. Pressure relief valves (and bursting discs if fitted) should have their outlets piped away to a safe disposal point. Allowance must be made for thermal expansion and contraction of the fluids.

Immersion Heaters

The immersion heaters are tested before leaving the factory and are ready for installation. The immersion heaters are thoroughly dried prior to despatch but moisture may collect in the heater during transit or site storage. It is important that prior to connecting the heaters to the mains, an insulation test must be made across each element to earth. If the insulation resistance is less than 50,000 Ohms, the heaters must be dried out prior to connection. This can be done by placing the heaters in a low temperature oven or by passing a low voltage (maximum of 25% of the working voltage) through the elements in open air to a maximum temperature of 60°C. The heaters should be switched off at regular intervals to prevent overheating.

For further instructions on the immersion heater, refer to separate literature

Control Panel

Prior to commissioning and wiring to the immersion heaters, check all the control circuitry and main circuit connections are tight using the appropriate tools. Remove all loose items from inside the panel and other items that may be fastened to the cables.

4.0 Commissioning and Operation

Do not operate the equipment at pressures or temperatures in excess of those specified on the nameplate of the vessel marking. Flowrates should not exceed design values specified for the calorifier.

Test the control system with the mains live and the main isolator switched to ON.

Connect the thermostats and switch ON the main isolator switch. As the system is cold, the contactor should close and the heater ON lamp should light.

Remove one wire from the control thermostat and the contactor should open switching OFF the heater lamp. Replace the wire to the control thermostat and repeat the process for the safety thermostat.

It is assumed here that the secondary pipework is already full

Start with primary, secondary flow and return valves closed and secondary re-circulation pump is off.

Close the drain valve.

Slowly fill the heater.

Carefully open the secondary flow and return valves

Switch secondary re-circulation pump on

Reconnect the immersion heater. With the control thermostat disconnected, operate the contactor with the TEST switch. This will give manual control of the heater stages. If satisfactory, reconnect the thermostat. Check that the heater switches off by reducing the temperature on the control thermostat.

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.

5.0 Maintenance

To drain the Calorifier down (secondary side)

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 electrical power to the immersion heater.

Switch off the secondary system pump and isolate secondary return to heater.

Let the heater cool to a safe temperature

Isolate the secondary flow

If the heater shares a vent with other heater, isolate it from the common vent using the 3-way valve (it will now vent to atmosphere).

If the heater has no vent it may be necessary to remove a fitting above the calorifier to let air in during draining.

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

The heater shell internal condition can be inspected by removing the immersion heater allow visual examination

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

Check the thermostats every 12 months by removing and testing the contact resistance and comparing the switch point by immersion in hot water using a separate thermostat.

6.0 Recommended Spares

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

Description	Part Ref.	PA125A2	PA125A4	PA125B2	PA125B4	PA150A2	PA150A4	PA150B2	PA150B4	PA200A2	PA200A4	PA200B2	PA200B4	PA200C2	PA200C4	PA250A2	PA250A4	PA250B2	PA250B4	PA300A2	PA300A4	PA300B2	PA300B4	PA350A2	PA350A4
		Chest Gasket	NG125-2P	1		1																			
Chest Gasket	NG125-4P		1		1																				
Chest Gasket	NG150-2P					1		1																	
Chest Gasket	NG150-4P						1		1																
Chest Gasket	NG200-2P									1		1		1											
Chest Gasket	NG200-4P										1		1		1										
Chest Gasket	NG250-2P															1		1							
Chest Gasket	NG250-4P																1		1						
Chest Gasket	NG300-2P																			1		1			
Chest Gasket	NG300-4P																				1		1		
Chest Gasket	NG350-2P																							1	
Chest Gasket	NG350-4P																								1
Shell Gasket	NG125-P	1	1	1	1																				
Shell Gasket	NG150-P					1	1	1	1																
Shell Gasket	NG200-P									1	1	1	1	1	1										
Shell Gasket	NG250-P															1	1	1	1						
Shell Gasket	NG300-P																			1	1	1	1		
Shell Gasket	NG350-P																							1	1

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