

INSTALLATION, OPERATION, MAINTENANCE INSTRUCTIONS FOR GMS PEAKLINE WB BOOSTER SETS (FIXED SPEED MODELS)

1. GENERAL

The "Peakline WB" water booster unit (the PLWB) is designed to maintain a minimum water pressure in a system at all demand flow-rates up to the rated flow-rate. Depending on specification the PLWB may also include a downstream pressure regulating valve to prevent pressure over-shoot. The PLWB continuously and automatically monitors system pressure and maintains it at a minimum value or higher. A built-in accumulator vessel prevents excessive pump starting. The PLWB panel has a built-in connection for a feed tank low-level switch (switch and tank not included in standard PLWB) to protect against pumps running dry. PLWB units (fixed speed pump types) are sold in a variety of configurations e.g.

- Single pump
- Twin pump duty/standby
- Twin pump cascade (duty/assist)
- Multi-pump cascade (duty...duty/assist)
- Pressure transducer/Digital Control
- Pressure Switch control
- Optional inlet feed tank
- Optional downstream pressure-regulating valve.

Consult contract specific documentation (General assembly drawing, wiring schematic) for details of the specification of a given PLWB unit.

2. DOCUMENTATION:

Each unit is supplied complete with:

- These instructions
- A wiring schematic
- A general assembly drawing
- Detailed instructions for major components.

3. SAFETY

Please be aware of the following potential hazards, which could be present during installation, commissioning, servicing and operation:

- Injury hazard from heavy/sharp objects during installation. Plan and execute the installation with care.
- Injury hazard from pressure containing parts. In general, before working on pipe-work or other pressure containing parts, isolate and drain them. Never exceed maximum working pressure of the unit.
- Electrical hazard. The unit uses mains voltage electricity. External voltages may be fed to the unit which are not isolated by the unit isolator. Equipment on the unit may operate automatically without warning.
- Mechanical hazard. The unit has moving parts. Equipment on the unit may operate automatically without warning.
- Confined spaces. Some units may be supplied with a feed tank. This is a confined space and contains water. The level of the water may vary considerably during operation.

The unit must only be worked on by suitably qualified and trained personnel.

4. INSTALLATION

Install in accordance with any applicable national and local regulations. Consult the general assembly drawing specific to the unit for details of pipe-work connections.

Location: The unit should be located indoors in a dry, frost-free area. Ideally the unit should be raised slightly above floor level on a level concrete plinth.

Pipe-work: The inlet of the unit should be connected to the feed tank by pipe-work at least as big as the inlet connection, via an isolation valve. The outlet of the unit should be connected to the downstream system by pipe-work at least as big as the outlet connection, via an isolation valve. For commissioning purposes there should be an off-take valve (1" BSP) between the PLWB and outlet isolation valve. This will allow the commissioning engineer to draw off water whilst the system is isolated.

IMPORTANT NOTE: Pressure Regulating Valve: Pressure overshoot can occur when the PLWB pump(s) run on beyond the duration of a demand for water and can be as high as the pump "closed valve head" plus any inlet static head. If this pressure will cause over-pressure of downstream components a pressure regulating valve should be fitted. Consideration should also be given to fitting pressure relief valves to protect susceptible downstream equipment. If a pressure regulating valve is to be fitted there should be a downstream draw-off point and pressure gauge between pressure regulating valve and outlet isolation valve. This will allow the commissioning engineer to draw off water whilst the system is isolated whilst setting up the pressure regulating valve.

Accumulator vessels have a water connection (usually on the bottom) and an air valve (Schrader type valve - similar to a car tyre valve) which is usually on the top, off-centre. Some accumulator vessels also have a small threaded connection on the top centre, fitted with a temporary plastic cap. This temporary plastic cap must be replaced with a permanent fitting (valve, end cap or pressure gauge) to prevent water leakage in service.

Required electrical power supply varies depending on unit specification. Consult the wiring schematic for details. Connect the power supply to the unit in accordance with local regulations (we would recommend use of a fused isolator close to the PLWB). Leave electrical power OFF

IMPORTANT NOTE: Wire a feed tank low level switch to the relevant terminals in the PLWB control panel to protect the PLWB pumps.

ENSURE THE SET IS EFFICIENTLY EARTHED

5. COMMISSIONING

We strongly recommend that the Unit be commissioned by GMS Thermal Products Ltd. Contact our sales office for details.

5.1: Calculate The Required Pressure Settings:

The Unit maintains a minimum system pressure. Careful consideration must be given to the required minimum allowable pressures. In general, minimum pressure will be that which is required to prevent air locking in those parts of the system at lowest pressure (usually the highest parts), during all demands. Maximum outlet pressure equals PLWB pump "closed valve head" plus any static head – this will be higher than the pressure switch setting. Check that this maximum pressure will not cause problems downstream. Fit a pressure-regulating valve if necessary. See the note above regarding the possible need for a pressure-regulating valve. Remember also that the pressure in a system will increase further when water in it is heated and so expands. If a pressure-regulating valve is fitted ensure that minimum pressure setting is adequate to overcome friction pressure loss at maximum demand.

5.1.1. Pressure settings:

Pump(s) On: Set at least to minimum pressure. Set each pump differently in multi-pump cascade units.

Pump(s) Off: Set so pumps do not exceed starts per hour limit. Consult the specific literature for the pumps.

Accumulator air pre-charge pressure: Setting should be 0.2 BarG below minimum system pressure.

The settings to be used will depend to some degree on the type of pressure controller supplied with the Unit. Specific details of the pressure controller will be supplied with the Unit. PLWB units with pressure transducer/digital control systems will allow more flexibility in pressure settings than pressure switch operated PLWB's

5.2: Prepare the unit for commissioning.

For the purposes of these instructions we assume the following conditions apply initially:

Electrical power is OFF at the Unit Isolator

The Unit is dry and all isolation valves are closed.

Cold make up water supply is connected to the Unit and isolated.

Downstream system has already been filled with water via a temporary quick-fill connection and vented of air.

5.3. Set accumulator vessel air pre-charge pressure.

The accumulator vessel prevents excessive pump starts. The air pressure in it should be set 0.2 bar g. below the intended minimum pressure. To set the air pressure:

Remove plastic cover from the Schrader valve. Open the accumulator vessel drain valve. Using a compressor and accurate pressure gauge, set the air pressure to the required value. Close the accumulator vessel drain valve. Replace the Schrader valve plastic cover.

5.4. Units with GMS supplied feed tank: Check Level Switch(es) and fill the feed tank

The feed tank should be empty at the start of this procedure.

Electrically isolate the unit pump(s) by removing the pump power fuses within the unit panel. This is a precaution against dry running which would damage the pumps.

Turn power on to the unit.

Check that the low-level light comes on. If it does not, check that the low-level switch is not sticking and is installed the correct way up. In GMS supplied spill tanks with more than one level switch the low-level switch is the lowest in the tank. If the low-level light comes on when the low level switch float is raised the switch is installed incorrectly. Turning the switch through 180 degrees should correct this.

If the Unit has a mechanical make-up water valve (ball float type), open the make-up water isolation valve. Water will enter the spill tank until minimum level is reached.

If the unit has an electrical make-up water valve follow this procedure:

Check that the electrical valve has been energised. If it has not, check that the make-up water level switch, in the spill tank, is functioning correctly (as for low level switch).

Open the make-up water isolation valve.

Water will enter the spill tank until minimum level is reached. The electrical valve will then close.

Turn power off.

5.5. Vent the pumps:

Refer to the pump manufacturer's instructions specific to the pumps.

Open inlet isolating valve and isolating valves at pump inlets.

Vent pumps in accordance with pump manufacturer's instructions.

5.6. Fill the unit's pipe-work

Keep the system isolation valve closed.

Open isolating valves at pump outlets.

Open accumulator vessel isolating valve

Open isolating valves to pressure switches or pressure transducer.

Fully open the snubber valve on pressure transducer line.

5.7. Pressure switch operated units: Set up the pressure switch(es)

Refer to the pressure switch manufacturer's instructions.

Set the closing and opening pressures using the adjusting screws.

5.8. Pressure transducer controlled units: Set up the pressure controller

Turn power off.

Electrically isolate the unit pump(s) by removing the pump power fuses within the unit panel. This allows initial pressure controller set-up without the pumps actually operating.

Turn power on.

Refer to the pressure controller manufacturer's instructions.

Set the controller to start and stop pumps at the required pressures.
Turn power off.
Refit the pump power fuses within the unit panel.

5.9. Starting the pumps for the first time.

Keep the system isolation valve closed.
Fit a temporary drain hose to the off-take valve
Turn power on.
Pumps will run until the pump cut-out pressure is reached. On multi-pump units with cascade operation all pumps may come on initially.
3 phase pumps check direction of pumps' rotation. Correct as necessary by swapping phases.
Pressure can be released (and pump run times extended) by letting water out of the temporary drain hose.
This can also help to remove air from the pipe-work.
Slowly release pressure and check pump(s) come on (in sequence on multi-pump cascade units).

5.10 GMS supplied pressure-regulating valve option

The pressure regulating valve should be commissioned in accordance with specific valve manufacturer's instructions against a closed system valve. Use the downstream draw-off point pressure gauge which.

5.11 Completing the commissioning

When the above steps are completed and the unit is switched on the system isolation valve should be slowly opened. If the system downstream of the unit was not previously filled with water take care that PLWB pumps are not allowed to run dry. Restrict flowrates to within pump capacity (ensure system pressure does not fall below minimum at the PLWB). Check that water is present at the high points of the system by venting them. Keep a record of all settings.

6. OPERATION

The PLWB operates automatically. Some PLWB units need regular manual changeover of duty/lead pump on duty/standby units and cascade units – although this may be automatic on some units – consult GA and wiring schematic for details

7. MAINTENANCE

We strongly recommend that the Unit be serviced annually by GMS Thermal Products Ltd. Contact our sales office for details.

Daily: We would recommend that a visual check be carried out to check for pump trip or other obvious faults.

Monthly: We would recommend that the following items be checked (as applicable depending on PLWB configuration).

- Level switch operation
- Pressure switch/controller operation
- Pump operation
- Feed water make-up valve operation

These can be checked by following the appropriate section of the commissioning instructions.

Annually: And after any period of prolonged inactivity, we would recommend that the following items be checked.

- Accumulator vessel air pre-charge pressure
- Level switch operation
- Pressure switch/controller settings and operation
- Pump operation
- Feed water make-up valve (if any)

These can be checked by following the appropriate section of the commissioning instructions.

