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LOWARA UK

PREFIX Beta Pressurisation set

Operating and maintenance instructions

Declaration of conformity

Lowara pumps UK declare that the Prefix pressurisation set conforms to the requirements of the Machinery Safety Directive 89/392/EEC.

Conforming to the UK Health & Safety Requirements	S.I. 1992 No 3073 S.I. 1994 No 2063
Water supply (Water fittings) regulations	1999
Simple pressure vessel directive	87/404/EEC
Code of practice for heating and chilled water systems	BS7074 (parts 1, 2 & 3)

Signed:  **Position:** Engineering manager **Date:** 01-08-08 **Revision**
 Clive Willmott

Introduction

This leaflet contains information to enable the safe installation and operation of the products mentioned above.
 The following instructions must be read and understood by all persons responsible for the installation, operation and maintenance of this product.

Warning Symbols



Safety instructions where noncompliance would affect safety.



Safety instruction where electrical hazard is involved



Safety instruction where noncompliance could cause damage to the equipment

Instruction for safe use

This product has been designed for the pressurisation of sealed heating, chilled water and closed-condenser water systems to the operating conditions shown.



This product should not be installed until this leaflet has been studied carefully.
 Handling, transportation and installation of this equipment should only take place with the proper use of lifting equipment.
 This product must be stored in a frost-free dry environment.

Noise Emissions

This equipment operates at a noise level lower than 70dBA.

Installation.

The Prefix Beta unit is despatched mounted on a wooden pallet and covered in a protective film, it is recommended that the unit be retained in the protective packaging until the product is to be installed. The unit will arrive pre-packaged and wired ready for installation.



This product has been fully run tested at our works under simulated site conditions. The unit should be thoroughly checked for physical damage that may have been caused during transit.

If the unit is found to have damage it must be reported immediately and should not be installed.

The unit must be sited in a clean well ventilated area with good all round access.

Electrical connections.

The cable used for the incoming supply must be of adequate size to carry the motor full load current. This is shown on the duty plate. All non power cabling should be limited to 2.5mm².



All connections must be made using the appropriate wiring drawings for the equipment being installed, with particular attention being paid to the supply voltages.

The supply voltage is shown on the set duty plate.

Never operate this product with the control panel door in the open position.

It is essential that this equipment is earthed to the building earth system.

Pumps operate at 230v 50Hz



The base frame must be earth bonded directly to the building earth system.

All wiring should be arranged such that it enters the control section through the appropriate cable glands.

Water supply and system connection.

Connect the Prefix Beta set ½”BSP ball valve (left side of cabinet) to a suitable water supply, incorporating an approved stop cock.



If the pressure available at the ball valve is below 0.3 bar, a low pressure orifice must be obtained and fitted.

Extend the 22mm plastic overflow pipe from the Prefix Beta break tank to a position where an overflow will be noticed and rectified.

Connect the pressurisation port ½” BSP (right hand side of cabinet) to the expansion vessel pipeline which in turn should be connected to the suction side of the system circulating pump. Quick fill and isolating valves must also be fitted to this line (see connection sketch Fig 1)

Commissioning.

1. Fill the system with water via the quick fill filling loop to the system fill pressure, this filling loop must comply with local water authority bylaws and contain double check valves. The filling loop must be completely removed after the system has been filled.



The pressurisation unit must never be used to fill the system.

The maximum running time for pumps fitted to this product must not exceed 4 hours in any 24 hour period.

It is essential that all air is allowed to escape freely via air vents and radiator vents etc.

All air must be evacuated from the system for this product to operate correctly.

2. Turn on the water supply feeding the product break tank.

Water treatment crystals/chemicals must never be introduced to the system via the break tank.

3. Check that pumps have been fully evacuated of all air by removing the bleed screw of each pump and allow water to escape until no air is present. Replace bleed screws.

4. Before the unit is opened up to the main system pressure check the pre-charge in the internal vessel. The pre-charge should be set to approximately 0.35bar below the system fill pressure. Charge as necessary with Nitrogen or dry air. Open system valve to Prefix Beta unit.

System set points.

System set points are entered via the front panel interface.

To stop unauthorised adjustment of set points a lock switch is positioned on the back of the display PCB this will need to be switched to the unlocked position to enable set points to be changed.



Switch the selector switch to the appropriate set point and the display will show the value of that particular set point, if the value is blinking on/off the value is able to be modified, if the value is not blinking it means that the lock is active and the value will not be able to be changed.

To increase or decrease the value press the up/down buttons. The longer you press the button the quicker the change rate.

Once you have selected the correct value move the selector switch to next set point that you wish to change, the values in the previous set point will be automatically saved.

Once you have entered data into all relevant set point parameters the selector switch should be set to the Auto position. If the data is to be locked then switch the lock switch on the rear of display PCB to the locked position.

Set point description.

Delay Start.

This set point is adjustable between 0-10 seconds and is used to delay starting the pressurisation pump for the set period. This can be useful especially on chilled water system where it can be very difficult to remove all air.

Low pressure set point.

This set point is typically set approximately 0.4 bar below the fill point.

High pressure set point.

This set point is typically set approximately 0,2 bar above the final working pressure.

Duty pump cut in.

This should be set to the static height of the building + 0.35 bar. The standby set points are automatically set from the duty pump set points.

Auto.

This is the normal operating position for the set and will display system pressure.

Off.

The off position performs two functions, if a the main pump has failed and the duty standby pump has been activated, the duty pump will be locked out until the system is reset by switching the selector to the off position and then back to auto. If the selector switch is left in the off position no pumps will be able to run but the system will still be monitored for all other conditions I.E. low/high pressure.

P1/P2 hand positions.

If either pump one or pump two is selected that pump will run continuously regardless of system pressure. This function is primarily intended to check pump rotation and pumps should not be left to run excessively. If a pump is left to run in this position it will automatically be locked out after 16 minutes

Exercise.

This set point is adjustable between 0-30 days and is used to run the pumps for a short period after the set time has elapsed, running the pumps at regular intervals helps prevent pumps from seizing due to inactivity.

V/Free contacts

See appropriate drawing for Volt free contact availability. Rating 1A 50v maximum

Features.

Commissioning valves.

Commissioning valves have been provided to aid fault finding and checking that the system operates at the correct values. The isolation valve fitted between the unit and the main system pipework should be isolated. . The two internal ball valves can then be used to manipulate the pressure within the unit to check that the pump cuts in and out as required. These valves can also be used to dump water/pressure back to the break tank to enable the internal vessel pre-charge to be checked.

Remote inhibit

If the remote inhibit contacts have been activated then the display will show set inhibited, during this condition no pumps are allowed to run irrespective of system pressure, however the system will still be monitored for all conditions.

Run limit exceeded.

If a pump is called to operate for periods in excess of 16 minutes or a combination of frequent starts both pumps will be locked out and prevented from further operation. To reset the timer circuit switch the selector switch to the off position and back to Auto again.

Transducer failure

If the transducer fails the display will read Sensor error and prevent pump operation, the high low pressure contacts will simultaneously operate to indicate that a failure has occurred and switch off the boiler circuit.

Break tank low water level.

The break tank contains a low level float switch which will stop all pumps from operating whilst the water level is low. Once the water level rises to the reset position the pumps will be released to operate as normal.

Boiler/chiller interlock

A volt free normally closed circuit is provided as a boiler/chiller interlock. The circuit has 1 high pressure contact and 1 low pressure contact either of which, when operating, will open the boiler/chiller circuit. If the high pressure contact is not required with chiller applications it can be omitted. See product wiring drawing.

Operation.

Ensure MCBs in the electrical section are at the on position, switch selector switch on front panel to the Auto position.

Switch main isolator on front door to the on position. The digital display will now go through the starting / check sequence, after about 8 seconds the display will show system pressure.



If the system pressure is lower than fill pressure then a pump will run and start to raise the system pressure.

Once the system pressure is restored the pump will stop.

If the pressure in the system falls to the duty pump cut in point the duty pump will start, once the system pressure has been restored the duty pump will stop. Each time the pressure falls the alternate pump (on two



pump units) will start and restore system pressure. If the duty pump after running for 2 seconds has not succeeded in raising the pressure and it continues to fall by 0.2 bar it will be deemed that the duty pump has failed. The failed pump will then be locked out and the standby pump will run and take the place of the duty pump.

If a pump trips for any reason it will be locked out and the standby pump will operate in its place.

Once the reason for pump failure has been ascertained and rectified the selector switch can be switched to the off position and back to auto to reset the controls.

Maintenance



Routine check (3 monthly intervals)

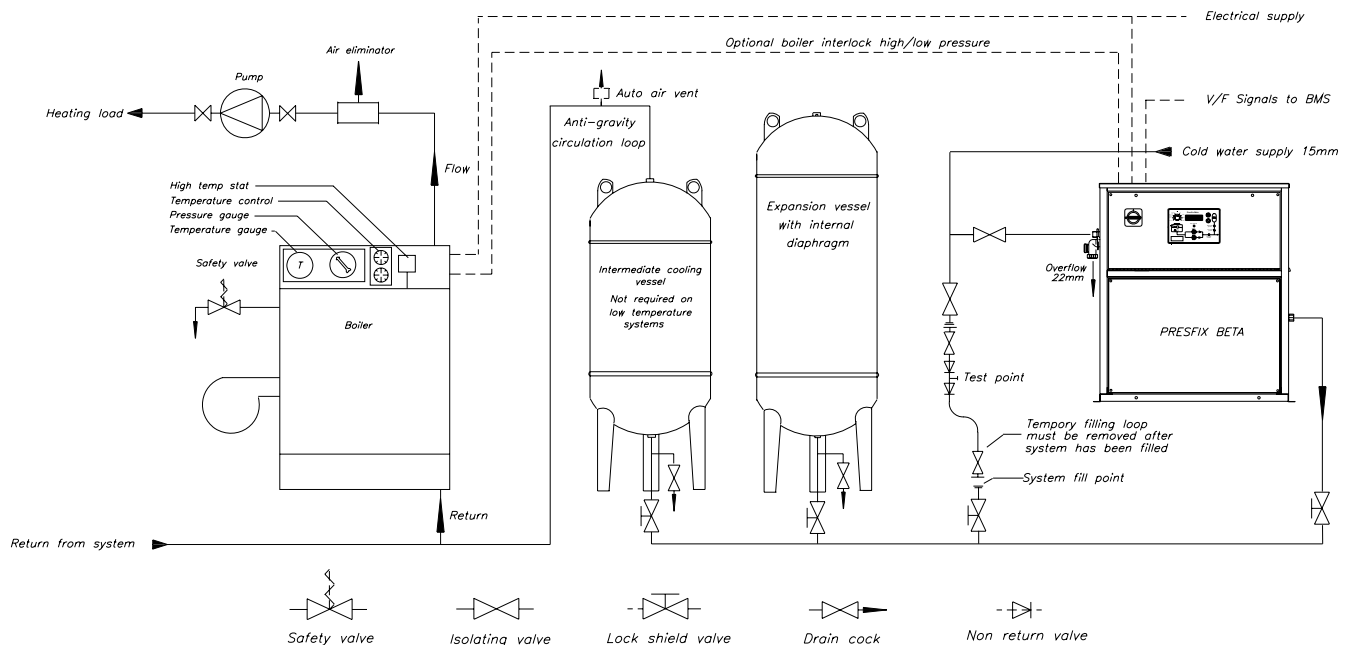
1. Check that the pump seal is not leaking.
2. Check the pump is not seized and develops the correct pressure.
3. Check that the pump operates without undue noise or vibration.
4. Check that the motor runs without overheating.

Routine check (6 monthly intervals)

1. Check the break tank is clean and that the correct water level has been maintained.
2. Check that all screws are tight on electrical components.
3. Check that the earth connections are tight and making good contact.
4. Check that the gas pre charge is at the correct pressure, this should be done by isolating the unit from the System and draining water back into the break tank by opening one of the 4mm ball valves (see drawing for location) once the unit pressure has been discharged, a tyre gauge can be connected to the pre charge valve to display the vessel pre charge pressure. Recharge as necessary with Nitrogen or dry air. All other expansion vessels connected to the system can be checked in the same manner.

Typical MTHW sealed system max. 120°C. Intermediate vessel only required on MTHW systems

Fig 1



Fault finding guide.

Fault	Possible Cause	Remedy
Pump fails to start	Power supply failure Control panel fuse blown, MCB tripped Remote inhibit active Low water level	Reinstate incoming power supply Replace power supply fuse Reset MCB Turn remote inhibit off Reinstate water supply
Pump fails to stop	Set point set too high Manual operation selected System pressure low due to large leak	Lower set point Select Auto operation Switch unit off until leak is repaired
Pump switches on and off quickly	Air in system Vessel pre-charge incorrect	Purge air from pumps and pipework Check vessel pre-charge and Charge as necessary with Nitrogen or dry air
Pump runs but will not make pressure	Pump air locked Commissioning valve left open Incorrect rotation Passing too much water	Open pump bleed screw and vent pump Check commissioning valves are in correct position. Check pump internal connections. Check system for leaks
Pump overheating	Pump partially seized.	Remove pump and check for sediment build up or foreign objects
Pump set frequently starting. (pressure falls to cut in point)	Newly installed system with large amount of air in pipe work Leaks in system pipe work Vessel pre-charge incorrect	Bleed system to remove air Repair leaks Isolate vessel and pre-charge with Nitrogen as appropriate
Break tank overflowing	Leaking ball valve Non-return valve letting by Commissioning valve left in open position	Replace ball valve seal Replace/clean non-return valve Close commissioning valve
Pump stops and pressure drops immediately	Non-return valve letting by Vessel pre-charge incorrect	Replace non-return valve Check vessel pre-charge and Charge as necessary with Nitrogen or dry air



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