

PRESSURE SWITCH BOOSTER O&M

The Booster Set has fixed speed pumps and provides control on Duty, Standby or Assist pump application.



IF A SUCTION PROBE HAS BEEN FITTED, DO NOT ATTEMPT TO START PUMPS UNTIL THE SUCTION MANIFOLD HAS BEEN VENTED AT THE PROBE ASSEMBLY. THEN VENT EACH PUMP TO INSURE THEY ARE PRIMED.

Operation and Functionality

The interlocked control panel door isolator when in the OFF position isolates the electrical supply to the isolator itself. The HAND / OFF / AUTO switches for each pump allow the pump to be manually switched ON and OFF independent of control and each other. In the AUTO position the pumps are controlled by signals from pressure switches via the control panel, which contains a minimum run timer. When the system pressure reaches 0.3 BAR below a set value, the pressure switch will signal the panel to engage the duty pump. The duty pump will run to achieve the set point and then run on for a set period of time. This setting can be adjusted in the control panel. The timer is there to protect the motor start contacts from excessive starting.

Please note: If operating any booster set pumps in the Hand position, there is a danger that if there is NO FLOW in the pipe work, damage to the mechanical seals and/or impellers of the pumps could occur. The Hand Position should only be used for testing the pumps or in an emergency situation.

If operating Hand position in an emergency situation, we recommend that a “spill back” pipe off the discharge manifold is installed to allow a permanent flow back to the cold water storage tank. This will prevent damage to the pumps.

PLEASE NOTE THAT WHEN THE PUMP IS RUNNING ON ITS MINIMUM TIMER IT MAY REACH THE CLOSE VALVE PRESSURE OF THE PUMP PLUS ANY STATIC HEAD PRESENT.

When the demand exceeds the rated output of the duty at a chosen operating pressure, the system pressure will begin to decrease. At this point the second pressure switch calls in the assist pump. The duty and assist pumps will continue to run until the system pressure reaches the set value. Should the system pressure continue to rise to the set point, the assist pump will be signalled to stop, followed by the duty pump and this will occur after the operation of the minimum run timer. The afore mentioned sequence of operation is repeated for a third assist pump if fitted. The panel is designed to implement automatic duty operation, to equalise wear on pumps under its control. The auto-change sequence is not programmable and is initiated on each duty pump cycle. Also included in this panel are volt free contactors for connection to BMS for set monitoring

Installation

All installation pipe work should be in accordance with local water authority regulations.

If the booster set is sited close to living accommodation, it is advisable to install flexible pipe couplings on the suction and discharge pipe work to prevent vibration being transmitted through the pipe work.

Isolating valves should be fitted to both suction and discharge pipe work connected to the manifolds of the booster. The suction and discharge pipe work must be at least the same size as the booster manifolds; if smaller, this may reduce pump performance, increase velocity and noise. The suction and discharge pipe work must be supported in order not to put any strain on the pump connections.



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Installation cont...

Where the suction pressure is negative (suction lift) the suction pipe-isolating valve should be omitted. The suction pipe should be short and straight as possible. To keep friction losses to a minimum avoid unnecessary bends and fittings. When a pump set that is not self priming is to draw water from a level lower than the pump inlet port, a foot valve and strainer must be fitted to the end on the suction pipe, below the lowest possible water level (dynamic level). The pipe must slope downward, away from the pump, to avoid airlocks. If this is not possible and the suction pipe is installed so that parts of its length is higher than the pump inlet, then an air vent and priming plug must be fitted in the highest part of the pipe.

When water is supplied to the booster set from a storage tank, check that the tank size is adequate to meet the maximum demand of the booster set when all the pumps are running. Before the booster set is commissioned it is recommended that the system delivery pipe work connected to the discharge of the booster, be tested to 1.5 times the maximum pressure that the pump set is capable of producing.

Location

The booster set should be sited in a dry, well-ventilated, frost-free position but not subject to extremes of temperature. The booster set may be sited outside but must be protected from the elements by means of a suitable cover. Ensure that the pump and motor are clear of obstructions and that an adequate air supply reaches the pump motors and the control panel vents. The booster set should be positioned as close as possible to the source water supply. Ensure that the booster set is mounted on a flat surface and connection pipe work supported in order not to strain connections.

Electrical Connection

A qualified electrician in accordance with the latest I.E.E regulations should carry out all electrical work.

The operating voltage and other electrical data is marked on the panel label. Make sure that the booster is suitable for the electrical supply on which it will be used. All electrical connections to the booster set must be made in accordance with the wiring diagrams supplied with the booster set.

Priming and Venting

All pumps must be vented and primed before starting since the mechanical seal faces are lubricated and cooled by the pumped liquid. On installations where there is a positive inlet pressure (flooded suction) the pumps must be vented by releasing the air vent screw, or plug until all the air has been expelled. On installations where there is a suction lift, the suction pipe must be filled with water and the pumps filled through the priming plug.

WARNING: Do not over tighten the airscrew or plug as this may lead to damage and leakage.



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Frost Protection

Pump(s) that are not being used during periods of frost should be drained to avoid damage. Remove both the drain and vent plugs and allow the pump to drain. Do not replace the plugs until the pump(s) are to be used again.

Pressure Vessel Installation

If a pressure vessel is to be installed remote from the discharge manifold or riser, it should be connected within the following guidelines:

| | | |
|------------------------------|---------------------------------------|----------------|
| Vessel inlet connection 1" | 1-4m from discharge manifold or riser | 1" pipe work |
| Vessel inlet connection 1" | 4-6m from discharge manifold or riser | 1 ¼" pipe work |
| Vessel inlet connection 1 ¼" | 1-2m from discharge manifold or riser | 1 ¼" pipe work |
| Vessel inlet connection 1 ¼" | 2-4m from discharge manifold or riser | 1 ½" pipe work |
| Vessel inlet connection 1 ¼" | 4-8m from discharge manifold or riser | 2" pipe work |

The pressure vessel needs to be pre-charged with air (0.3 – 0.5 Bar) below pump wake up level. Before checking the pre-charge the vessel will require to be isolated from the system and de-pressurised.

Maintenance

Whilst the booster set requires minimal maintenance, it should be inspected on a regular basis, as failure to the set could potentially cause personal injury and considerable damage to property. We would therefore recommend that an **ESPA Maintenance Contract** be taken out. It is essential that the following checks be carried out at intervals of not more than six months.

- Check and adjust vessel pressure
- There are no water leaks
- Pumps have adequate ventilation
- Pumps run quietly
- Pumps shafts are free to rotate
- Monitor set point pressure

The pressure vessel needs to be pre-charged with air (0.3 – 0.5 Bar) below pump wake up level. Before checking the pre-charge the vessel will require to be isolated from the system and de-pressurised.

Warranty

A manufacturers warranty of 1 year from commissioning date is valid on the booster set.

NOTE: A commission test report must be shown with any warranty claim.