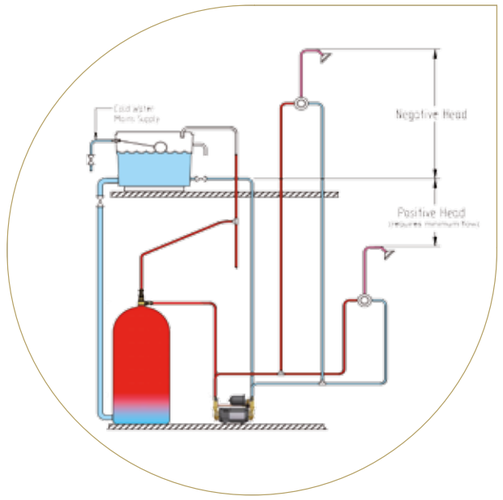
Water Boosting Pumps, Pressure and Pump Types Explained
Vented and Unvented Systems

STUART TURNER
ENGINEERED TO EXCEL

Vented System (Gravity Fed)

Typically used in older properties, this indirect system uses the mains water supply to feed a cold water storage tank, usually located in the roof space, which in turn feeds a hot water cylinder and cold outlets. The system relies on gravity to provide the pressure and flow.



Unvented System (Mains Pressure)

More common in newer properties, this system uses the mains water supply to directly feed a combination boiler or pressurised hot water cylinder. The system performance is dependent on the incoming mains pressure to the property, which may be low or intermittent.

Positive Head Systems

A positive head system exists when sufficient pressure is available under gravity to provide a flow at the outlet. Typically a positive head condition exists where the flow from the outlet is more than 1 litre/min.

Negative Head Systems

A negative head system exists when there is inadequate pressure or head of water under gravity to provide a sufficient flow at the outlet. Typically a negative head condition exists where the flow from the outlet is less than 1 litre/min.

Pressures

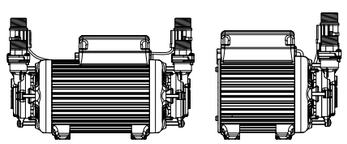
Pumps for vented (gravity) systems are rated in bar, which is a measure of how much pressure they generate but it helps to know the height of the cold water cistern above an outlet as this dictates the static water pressure. For example, 1 bar pressure is equal to 10 metres static head of water. Generally the higher the bar rating the higher the performance. However it is important to match the correct size of pump with the application to ensure optimum performance.

The following can be used as a guide:

- 1.0 bar pressure = Low boost
- 1.5 – 3.0 bar pressure = Medium boost
- 3.0 bar pressure + = High boost

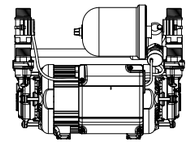
Twin and Single pumps

Twin pumps are designed to boost both hot and cold water supplies equally. Single pumps are designed to boost single water supplies; hot, cold or pre-mixed.



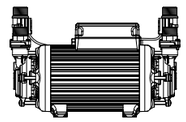
Universal Pumps

Operate in positive or negative head conditions and do not require a gravity flow to start, incorporating both a pressure and flow switch. The pump starts automatically when the pressure switch detects a drop in pressure when an outlet opens. The flow switch keeps the pump running whilst there is sufficient flow of water. When the flow stops, the pump continues to run for 3 seconds allowing the system to re-pressurise.



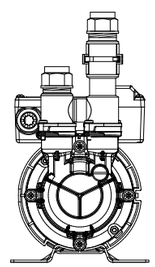
Standard Pumps

Standard pumps operate under positive head conditions only. A standard pump is operated by a flow switch, automatically starting when a gravity flow of water greater than 0.6 - 1.0 ltrs/min (depending on the pump model) through the outlet is detected. The pump will automatically stop when the outlet is closed and the flow ceases.



Mains Boost Pumps

Suitable for unvented systems and designed to be connected directly to the incoming mains water supply where there is low or intermittent mains water pressure.
Mains boost pumps provide additional pressure and flow to multiple outlets simultaneously within a property, including unvented boilers. Mains boost pumps must be approved by WRAS and comply with UK water regulations.



Peripheral Pumps

In a peripheral pump water is circulated and gains pressure around the periphery of the pump head. Peripheral pumps are compact and system friendly as they tolerate high hot water temperatures and air within the system to a greater extent than an equivalent centrifugal pump. They are ideal for applications where higher pressures with nominal flows are required.

Centrifugal Pumps

A centrifugal pump draws water into the center of the impeller where rotation throws the water out under force to generate pressure. Centrifugal pumps are designed to produce good flow at nominal pressure. Higher pressures are achieved by using multiple impellers within the same pump head, where the pressure generated by the first impeller is fed into a second impeller and so on, this is called staging. Larger Centrifugal pumps are therefore termed as multistage.

Automatic Flow Switch and Boostamatic Pressure Switch

Automatic flow switch pumps provide a constant water supply from a break tank, these units rely on gravity flow to activate. Features include fully automatic control with dry run protection.

Boostamatic pressure switch pumps provide a fully automated pressurised water supply.