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# Shower Systems

## Introduction

The last twenty years has seen a dramatic change in UK showering technology and performance. The market, initially dominated by mixers, with a swing to the instantaneous electric shower now enjoys a fairly even balance between mixer and electric products. For a long time it was a condition of UK bathing rationale that the bathtub should always be the primary method of getting clean all over. Manufacturing changes, particularly to mixer showers have overcome three basic problems which for years have made the showering experience something which has been endured rather than enjoyed and yet research shows that a third of UK homes are still without a shower!

## Mixer Showers

The most basic requirement is an adequate flow rate. Manufacturers of mixer type showers are of course aware that the British traditional plumbing system differs considerably to that which we would expect to encounter in other Western countries. Terminal fittings have to be designed to operate effectively with the characteristics of our low pressure systems. For many years a typical gravity fed shower system, operating on the traditional 1 metre head, (measured in this instance from the shower head to the base of the cold water cistern) could be expected to deliver at best about 5 litres of water a minute. For some this is not enough to get wet all over. Modern low loss waterway designs have increased the flow rate. Mixers are now available which are capable of pushing out 8 or 9 litres a minute at this modest pressure, without the need for booster pumps.

Temperature fluctuation, which we have all experienced at one time or another, can now be effectively addressed. Thermostatic showers have been around for a long time now. It is really in the last two decades that improvements in both wax and bi-metal elements have produced very close temperature control, typically to +/- 1°C.

This is in addition to the benefit of shut down protection. The mixer will shut down to a low seepage flow if either the hot or cold supply fails, protecting the user from a blast of hot or cold water.

## Thermostatic Showers

As with many things, thermostatic showers are required to perform to certain British Standards, and for some time this has been BS 1415 part 2, now replaced with BS 1287. Recent years have seen a large influx of mains fed unvented systems and these are covered by BS 1111. The Government is very keen to eliminate any risks of mishap in establishments where people with special needs may have access to bathing equipment, typically care and nursing homes. The managers of such establishments must now carry out a risk assessment. Where optimum levels of safety are required, terminal fittings, such as shower controls and bath fillers, must comply with a much higher standard of performance. NHS Estates published Model Engineering Specification DO8 and a third party certification scheme known as the 'TMV3' scheme was introduced. Products that comply with this requirement have undergone thorough testing at an independent test centre to achieve accreditation to this standard. Another new standard, which is equivalent to DO8, is BS7942. Whilst the responsibility of risk assessment will most likely be down to the residence manager, guidance will inevitably be sought from the specifier or installer. Hard water is of course a regional problem and installers or consumers who live in such areas know only too well the difficulties that these conditions can cause. It is now common to see shower heads equipped with flexible jets to enable the bather to rub clean the spray plate if deposits start to form. Internal mechanisms built into some products enable the valve to be internally cleaned by movement of the operating controls. Unfortunately it is true to say that whilst the installers may be aware of these features and benefits, the message is often not passed onto the consumer.

## Electric Showers

Instantaneous electric showers still enjoy a total market share of just over 50% and as with mixer showers, there have also been changes in electric shower technology. Higher kilowatt ratings have gone some way to counter their reputation for poor flow, especially during the winter season. In addition to greater flow rates, close temperature stability is now a possibility with the introduction of thermostatic units.

## Shower Selection

Specifying the correct shower for a customer is a difficult business and many issues need to be considered. Inevitably site conditions and customer preferences will dictate which type of system is installed, but in the interests of safety and simplicity it is sensible to categorise both mixer showers and electric showers into two groups. Temperature Stabilised (typically thermostatic) and Non-Stabilised. Cost-wise, the latter will always be the cheaper option but it is important not to sell on price.

Consideration of the customer's lifestyle is important, for if the very young or less able are likely to be using the shower then only a thermostatic product should be considered. The selection is now between a mixer or electric. If the customer is striving to achieve high flow rates then mixer showers will be the best option, however the lower flow rates of the electric shower can offer lower running costs. Additionally there will be no demand on existing stored supplies and the options do not end there!

About 50% of all boilers sold are combination boilers. Many installers assume that by fitting a thermostatic shower valve to such a system, a good shower will be available. Costs of thermostatic mixing valves may be an issue, and this can be addressed in some installations by the use of 'Pressure Balancing' type mixing valves.

The internal mechanism of a pressure balancing mixing valve is designed to balance the pressure variations that occur in the hot and cold water supplies, whilst the product is in use. These pressure variations will occur when other draw-offs are used in the plumbing system. The result of balancing the inlet pressures and the use of relatively constant hot and cold supply temperatures is to have a steady or constant shower temperature.

A pressure balancing mixing valve is designed to be used with high pressure systems, typically associated with unvented, thermal store, and fully modulating combination or multipoint gas water heaters. A fully modulating gas water heater is designed to supply relatively constant temperatures of domestic hot water. If in doubt seek the manufacturers advice.

## Mixer Valve Installation Focus

A few years ago the leading shower manufacturers attended a series of meetings designed to create a directory of definitions and to harmonise the way in which the product's installation guides are written. This was aimed at reducing the number of installation faults and call backs of both manufacturers and installers.

Air locks are a common problem, often caused by poorly designed installations, especially when using a pumped system. In order to help avoid this, it is recommended that the shower connection from the hot distribution pipe is taken from a point below the vent pipe connection allowing the air to rise and vent, without affecting the flow.

A 'Mains fed system', is often associated with a combination boiler. A shower installation is generally a straight forward operation, however it is important to measure the cold water supply pressure. The pressure should be within the range specified by the shower manufacturer. Excessive pressures can cause operational difficulties. However the inclusion of a drop tight pressure reducing valve, will ensure that an effective shower is installed.

If the boiler does not include an internal expansion vessel for the domestic hot water, then an external vessel of typically 0.16 litres may be needed to prevent a system over pressurisation.

For further information please contact:-  
Aqualisa 01959 560000  
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## References

BS6700:1997 – Specification for the design, installation, testing and maintenance of services supplying water for domestic use within buildings and their curtilages.

NHS DO8 Document

WRAS Guidance Document



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Further information about the Institute is available at [www.plumbers.org.uk](http://www.plumbers.org.uk) and [www.registeredplumber.com](http://www.registeredplumber.com)



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