What is a Thermostatic Mixing Valve?
Quite simply a thermostatic mixing valve is a device that mixes hot and cold water before discharging it at a stable temperature.

Where are TMVs used?
Domestically TMVs are most commonly used as showers, however TMVs can be found in a number of other applications around the home ranging from controls on solar thermal hot water systems to taps and bidet controls.

Why is the use of TMVs increasing?
The use of Thermostatic Mixing Valves (TMVs) in the home is increasing. This is due in part to changes to legislation (in Scotland) requiring the mandatory use of TMVs in new homes and an increased awareness of the benefits of using TMVs to prevent scald incidents.

In Scotland the maximum temperature of water discharged from, or to, any bath or bidet (domestic situations) is now limited to a maximum of 48°C.

Hot bath water is responsible for the highest number of fatal and severe scald injuries in the home. Young and old are most at risk because their skin is thinner and less tolerant to high water temperatures. Every year around 20 people die as a result of scalds caused by hot bath water and approximately a further 570 suffer serious scald injuries.

Installation of TMVs can significantly reduce the likelihood of occurrence of scald injuries.

Domestically TMVs are most commonly uses as showers, however TMVs can be found in a number of other applications around the home ranging from controls on solar thermal hot water systems to taps and bidet controls.

The installation of taps to a domestic or commercial water system is also governed by the UK Water Regulations 1999 and plumbers should be fully trained in their application and installation requirements.

Features and Benefits

Feature	*Benefit*
'T' Pattern TMV	Can easily be fitted to existing hot pillar tap to 'upgrade' the scalds protection offered by the water system. Variation of sizes available to suit, bidet, basin or bath flow rates and temperatures.
Shower TMV	Available in a variety of formats and with a huge choice of styles to suit individual requirements. TMV provides additional comfort in the event of other draw offs as well as the scald protection offered.
Bath / Shower mixer	Convenient solution for a bath filler and combined shower. One TMV mechanism covers both outlets therefore it is a cost effective solution for a shower over the bath.
Basin / Bidet tap	Tap format with TMV mechanism built in.

Checklist: What to look out for / things to ask about

• Company pedigree – for how long has the manufacturer and retailer been trading? Is the manufacturer a member of any trade organisation such as the BMA?
• Customer service – what does the manufacturer and retailer offer?
• Guarantee – what length of warranty and what conditions does the manufacturers give?
• Maintenance – are the TMVs easy to maintain? Will they need a specialist to repair them or can they be repaired by a good DIY enthusiast?
• Compatibility – will they TMV work with your water supply system? Consider the nature of the hot water supply e.g. combination boiler and the minimum Water Pressure – what minimum pressure do TMVs require to give a good flow rate?
• Spare parts – what is available and for how long in the life of the product?
• Standards – do the taps conform with BS EN 1287 and or 1111 or do they have TMV2 approval?

Frequently Asked Questions

Q. Why should I install a TMV?
A. A TMV can be used to control the maximum hot water temperature available at the hot tap outlet thus significantly reducing the possibility of scalding the end user. A TMV therefore offers the most const effective solution to reduce the risks of scalding in the bathroom environment.

Q. What type of TMV do I need to fit and why?
A. Typically in domestic situations a valve that complies with BS EN 1111 and or BS EN 1287 or indeed has been certified as TMV2 approved is suitable. These TMVs are aimed at providing suitable safety for the average able bodied person in the home. A wide variety of products are available to meet the specific needs of the application.

If the end user could be categorised as less able by virtue of a physical or mental condition and are therefore deemed to be at greater risk of injury in their use of domestic hot water than would be the case for a normal able bodied person then a TMV that complies with either BS 7942 or NHS D 08 or a TMV that is TMV3 approved should be used.

Q. Can I install a TMV with unequal pressures?
A. In short – yes. However, care should be taken to check the manufacturers' information regarding the ability of the valve to cope with unequal pressures. Many manufacturers will quote the maximum amount of imbalance as a ration (e.g. 10:1 – this literally means that the valve will work with one pressure being up to 10 times larger than the other pressure). It is important that any valve is installed with check valves (if they are not an integral part of the TMV) where an imbalance of pressure exist as the check valves will prevent cross flow. It is also worth noting that where one supply is high pressure (typically the cold) and the other supply is low pressure a better solution would be to reduce the high pressure to a lower value (by us e of a pressure reducing valve) to nominally equalise the pressures.

Q. Will fitting a TMV affect my flow rate?
A. The fitting of any control device to a water supply will affect the flow rate. However, on high pressure systems any affect on flow rate should be negligible. The situation on low pressure systems can be somewhat different. This is especially true if a TMV designed for high pressure systems is fitted to a low pressure supply. The flow paths through the valve may not be big enough to allow adequate water flow. For TMVs designed to be used on low pressure systems the water flow may still be affected but this will be dependent on the amount 'head' between the outlet of the valve and the water supply cisterns. 1m of head equates to approximately 0.1 bar of pressure. Most TMVs have a recommended dynamic supply pressure requirement of 0.2 bar (equating to 2m head). For shower TMVs while there may be 2 m between the actual valve part and the cistern there may actually only be 1m between the shower head and cistern and this will be the limiting factor on the flow rate.

Q. Can I use a TMV with a combination boiler?
A. TMVs are suitable for use with combi boilers as long as the boiler is a fully modulating type (i.e. the gas flame is regulated in sympathy to the flow of water through the heat exchanger).

If the combi is not a fully modulating type the TMV will not be able to maintain a stable outlet temperature. This is due to hot water from the non-modulating boiler increasing in temperature as it enters the TMV, the TMV will reduce the amount of hot water it mixes with cold water to try to maintain the stable set temperature. In turn, the flow through the boiler is reduced to the point where a thermostat within the boiler switches off the gas burner. The water temperature from the boiler will then reduce until the boiler thermostat resets thus allowing the water flow to be heated again. This results in the outlet from the boiler and also therefore from the TMV to constantly cycle between hot, and cool temperatures.