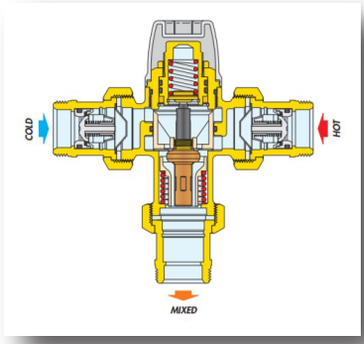
KNOWING THE FACTS

Technical Bulletin
Thermostatic Mixing Valves

Thermostatic Mixing Valves - Knowing the facts

What is a Thermostatic Mixing Valve (TMV) and why do I need one?

A Thermostatic Mixing valve blends cold water with hot water and maintains this at a set constant outlet temperature to ensure safe and comfortable hand washing, shower and bath water temperatures, reducing the risk of scalding.



How does it work?

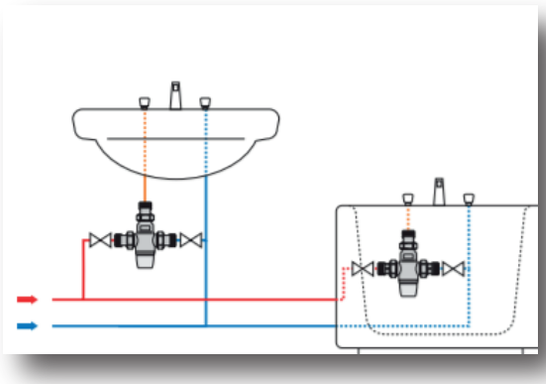
The controlling element of the TMV is a temperature sensor which is fully immersed in the mixed water outlet port. This expands or contracts to continually maintain the correct proportion of hot and cold water entering the valve.

What is the difference between a Thermostatic Mixing Valve (TMV) and a Tempering Valve?

TMVs are intended to deliver water used for ablutionary purposes (washing, showering and bathing). Tempering valves also blend hot and cold water usually for delivery at higher temperatures not suitable for these purposes. They are used in systems where the temperature of water in the storage cylinder can exceed 60°C, such as in solar heating systems with multiple outlets or as part of re-circulating domestic hot water systems.

Where TMVs should be installed?

These valves should be installed in areas where people would be at the highest risk of scalding. Different TMVs are available depending on the specification and standards that they meet and the type of property they are installed in.
These vary from healthcare and nursing home applications to installations from point of use of baths and basins to centralised mixing in commercial properties such as sports facilities, where stable temperatures with high volume flow rates are required.



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Which TMV should I use?

There are 3 Types of Thermostatic Mixing Valves;

Type 1 - Mechanical Mixing Valves (Tempering Valves)
Type 2 - Thermostatic Mixing Valves conforming to EN 1111 and EN 1287
Type 3 - Thermostatic Mixing Valves complying with NHS Estates requirements D08

Mechanical or Tempering Mixing Valves (TMV Type 1) shall meet the requirements of BS EN 15092:2008 - Building valves. Inline hot water supply tempering valves. Test and Requirements

Sanitary TMVs (TMV Type 2) are available for single user and multiple user outlets and are generally used in domestic and commercial non-healthcare applications and shall meet the requirements of standards:
- BS EN 1111: 2017 Sanitary tapware: Thermostatic mixing valves (PN10) General Technical Specification
- BS EN 1287: 2017 - Sanitary tapware: Low pressure thermostatic mixing valves. General Technical Specification
- UK Water Regulator's Specifications

Thermostatic Safety Mixing Valves (TMV Type 3) shall meet the test methods specified in Health Technical Memorandum (HTM) 04-01: Supplement Performance Specification D08: thermostatic mixing valves (healthcare premises).

A Thermostatic Mixing Valve (TMV) Type 3 approval ensures that the valves are manufactured to meet the highest specifications required by HTM 04-01 for mixing valves for use within any building which falls under the NHS regulations including Hospitals and any healthcare premises in the United Kingdom. Although Type 3 Thermostatic Mixing valves are predominantly used in the healthcare sector, they can be used in all types of buildings.

Different products are available for single user outlets and centralised systems with multiple outlets that demand high flow rates.

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What is the maximum working pressure and temperature?
The Altecnic TMV range covers use with hot and cold water, with maximum static inlet pressures of up to 10 bar, maximum inlet temperatures of 85°C with a temperature stability of +/-2°C.

Is the TMV factory set?
No, as it is impossible to predict what the valve will be connected to. The installer should follow the commissioning instructions provided with the valve and the desired temperature can be set during commissioning. Valves may have different setting ranges, therefore, ensure that the temperature range of the valve selected matches the installation requirements. The mixed water temperature must never exceed 46˚C but can be 2˚C higher than the recommended set mixed water temperature specified in the standards.

Can the installer adjust the temperature themselves?
Yes – if the mixed water temperature requires adjustment then follow the instructions in the Installation Manual. Turn the adjuster anti-clockwise to increase and clockwise to decrease the temperature.

Can the TMV be installed in any orientation?
The TMV can be installed either horizontally or vertically provided the pipework connections are correctly installed to the valve (i.e. Hot Pipe into Hot Inlet etc.). The valve will work equally well, whichever way up it is.

How many outlets can the TMV serve?
The legislation for the type of property can be a determining factor but this can also depend on how much water the system can provide, the pressure and flow rate in the system and the limits of the valve selected. It is common to see up to 3 or 4 outlets being served by TMV2 approved products. The mixed water temperature reaches the furthest outlet within 30 seconds. TMV Type 3 mixing valves are restricted to one valve per outlet (unless these are in parallel back to back) with restrictions on installation and pipe runs in critical areas of hospitals such as intensive care and neonatal units.

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Will flushing or disinfecting the system affect the TMV?
Certain disinfectant chemicals may wholly or partly remove the lubricant from the Thermostatic Mixing Valve. We strongly recommend that the valve is checked for performance after flushing and re-lubricate or service if necessary.

Are Non-Return Valves and Strainers included with the TMV?
All Altecnic point of use valves feature Non-Return Valves and Strainers (filters). Group TMVs can also be supplied which have optional Non-Return Valves built into the unions. Isolating valves and test points are sometimes also provided depending on the model selected.

Can TMVs be installed in underfloor heating systems?
Yes, but the normal blended outlet temperature range is disregarded, only a temperature between flow and return incoming temperatures can now be achieved. The flow and return connections are labelled H (flow) and C (return).

What happens when supply pressures drop, or temperatures increase due to usage elsewhere in the system?
The mixing valve automatically responds and maintains the mixed water outlet at the required temperature.

What happens if there is a disruption in the water supply?
The failsafe design of the TMV shuts off the mixed water flow automatically in the event of disruption in the hot or cold water supply to the valve.

Is Routine Inspection required?
Yes, TMV2 valves should be inspected at least annually. TMV3 valves should be tested according to the procedure specified in the TMV3 section of the IOM. If fitted, hot and cold water inlet Strainers should be flushed and cleaned annually or as required by the TMV3 testing procedure. O-Rings should be replaced every 3 years and the thermostatic element inspected and replaced if required every 6 years. It is recommended that TMV Type 3 valves should be tested within 8 weeks of installation.

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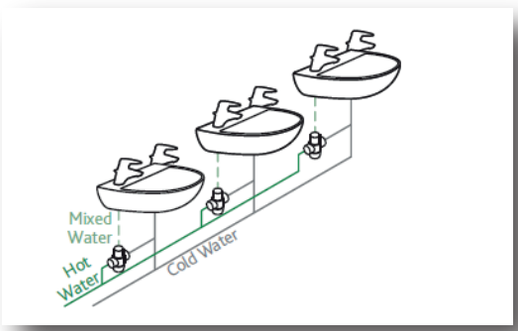
What approvals are required for TMVs?

TMVs used on domestic water applications must have WRAS and TMV2 or TMV3 certification depending on where they will be installed. Tempering valves need to be certified to BS EN 15092 by NSF (previously Buildcert) and the DTC Scheme.

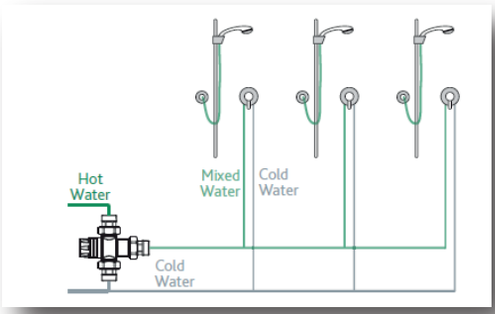
What are the different types of TMV's?

There are two main types of TMV's, these are known as "point of use" & "group" mixers.



As the name suggests a point of use mixing valve is designed to be installed to a single outlet, or in some instances back to back sinks providing the run of pipe is no longer than 2m.

Group mixers again work as the name suggests, they can be fitted to multiple outlets (showers) these are normally in communal areas such as sports facilities with shower blocks



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