

## Warm Water Mixing Valves



A mixing valve; also known as a tempering valve, is a mechanical thermostatic valve designed to control the water temperature output through the valve. Many areas require thermostatic mixing valves be installed on the domestic hot water supply; by code, for the protection of the residents.

### Why use a mixing valve?

- May be required by code in your area.
- To protect your family and guests from scalding water burns and thermal shock. Every year numerous people (mostly children) are seriously injured by residential hot water that is set too high or improperly protected from pressure change.
- To protect the health of your family from waterborne diseases. The maximum water temperature at any fixture in your home is 120°F or 49°C (except a dishwasher), which is very close to the ideal conditions for *Legionella Bacteria* (Legionnaires disease). The way to prevent your water from becoming contaminated is keep the water heater set at 60°C, killing the bacteria, and use a mixing valve to lower the supply water temperature.

### In Australia temperature allowed for various mixing valves is as follows:

ACT: 30 - 55°C (from Code of Practice)

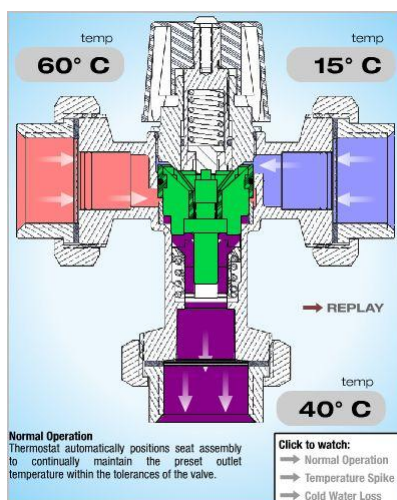
NSW: Designed to heat & deliver water at less than 60°C (from Regulation), 38.0 - 40.5°C (children & neonate patients) 40.5 - 43.5°C (adult patients)

Queensland: There is no specific regulation for Legionella and WWS.

AS/NZS 3500.4 requires up to 45°C for early childhood centres, schools, nursing homes etc., and up to 50°C in all other buildings (for sanitary fixtures)

AS 3500.4:2003 requires heated water to be stored at min 60C and delivered "hot" water for ablutionary purposes not to exceed 45 C for ....nursing homes ...., aged, sick or people with disabilities

Despite the lack of evidence linking Warm Water Systems and cases of Legionella, Australia is cautious and requires Warm Water Systems to be maintained and tested so that Legionella is controlled. Concern is primarily for high risk residents in health and aged care facilities; the real issue in all of these facilities is scalding versus Legionella (i.e. hot versus warm water)



A thermostatic mixing valve operates by sensing the temperature of the blended water and adjusting the seat in the mixing chamber accordingly. If the cold supply water suddenly drops in pressure the seat will close, limiting the amount of hot water allowed to pass through.

### Independent Monitoring Consultants

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## **Legionella Control in Warm Water Systems**

- Ensure that the water supply is of good quality
- Minimise the presence of biofilm on internal surfaces, use plumbing materials that don't support bacterial growth
- Recognise the importance of temperature control throughout Warm Water Systems
- Avoid stagnation in the Warm Water System
- Make sure there is a maintenance regime in place

## **Thermostatic Mixing Valve Maintenance (AS 4032.3:2004)**

- TMV's should be tested for temperature control and shut-off at least every 12 months. If a problem is identified immediate adjustment, repair or replacement is required

## **NSW/VIC regulate TMV's for Legionella control**

- Required disassembly and cleaning every 12 months
- Heat disinfection as part re-commissioning following cleaning

**NSW HEALTH** issued a Policy Directive Document Number PD2006\_078 Publication date 10-Oct-2006 Microbial Sampling - Warm water systems including thermostatic mixing valves.

Summary: This policy directive requires all health facilities to have appropriate monitoring programs for their warm water systems including thermostatic mixing valves to manage the potential health risk from the growth of Legionella bacteria.

Director-General Compliance with this policy directive is mandatory.

A hardcopy of the Code of Practice can be obtained from your Public Health Unit or downloaded from: [http://www.health.nsw.gov.au/pubs/2004/legionnaire\\_disease.html](http://www.health.nsw.gov.au/pubs/2004/legionnaire_disease.html)

It is important that any facility with Warm Water Systems undertake a Risk Assessment of the Warm Water System/s, prioritise the risks, and develop a plan to manage any and all identified risks.

## **A Warm Water System Risk Assessment includes:**

- System operation, capacity and demands
- Defects in the system Risk status of WWS outlets and users
- Review of Legionella/HCC monitoring

Following a proper and complete Risk Assessment you should make improvements to the system based on the findings of the Risk Assessment and further:-

- Develop a communication plan for adverse events (Legionella detected and/or case/s Legionella identified)
- Include a surveillance program:
- nosocomial pneumonia cases checked for Legionella routinely
- Checks on patients if Legionella is detected in WWS

## **Sampling Protocols**

- Independent Legionella testing should be performed on a monthly basis for a minimum of 1 year, and can be reduced to quarterly if no Legionella detected, (dependent on the Risk Assessment) samples should be collected from locations based on patient risk, and showers preferred or chosen over basins.

## **Monitoring for Legionella**

- Action plans for disinfection/decontamination
- Follow-up sampling program
- Communication plan in readiness in the event of Legionella detections or other adverse events

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## Types of mixing valves



**Source of supply** - Residential, commercial, industrial uses for tempering entire hot water distribution systems.



**Point of use** - residential, commercial and industrial uses, easily installed between the fixture supplies.



**Temperature actuated flow reduction valve** - Immediately closes in the event of a loss of cold water protecting you from being scalded. Used primarily to control the high limit water temperature of showers.



**Tempering valve** - Blends cold and hot water to extend the hot water capacity of residential water heaters and boiler coils.

Reference to Plumbing Help • ca for information explaining various mixing valves <http://www.plumbinghelp.ca/>

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