Technical Solution Sheet 6.11
6: Hot Water Plumbing

Warm Water Systems

AIM
The aim of this technical solution is to provide information to licensed practitioners on some of the requirements for the installation and maintenance of warm water systems in certain premises.

PLUMBING REGULATIONS 2008
The *Plumbing Code of Australia* (PCA) is adopted by and forms part of the *Plumbing Regulations 2008*. Part B2 of the PCA specifies the objectives and performance requirements related to the installation of heated water services. ***AS/NZS 3500.4: Plumbing and drainage Part 4: Heated water services***, is a "deemed to satisfy" document listed in Part B2 of the PCA and contains sections on "Water temperature" and "Testing and commissioning" and "Operation and maintenance".

The *Public Health and Wellbeing Regulations 2009* came into effect on 1 January 2010. The regulations require operators of warm water systems servicing high-risk populations to take "reasonable steps" to manage the risks of Legionnaires disease outbreaks.

WATER DELIVERY SYSTEMS
The information in this technical solution sheet has been developed jointly by the Department of Health and the Victorian Building Authority (VBA). The following highlighted information is taken from:

http://www.health.vic.gov.au/environment/legionella/waterdeliverysystems.htm

Legionella has been detected in warm water systems associated with showers both in hospitals and in aged care facilities in Victoria. However, much of the evidence linking Legionella in warm water systems to cases or outbreaks of Legionnaires' disease is from overseas.

There is not yet any comparable evidence in Victoria or Australia. There has been an outbreak of Legionnaires' disease associated with a warm water system related to a water delivery system that stored warm water in a Victorian car wash facility.

CHANGES IN LEGISLATION
On 1 January 2010 the *Public Health and Wellbeing Act 2008* and the *Public Health and Wellbeing Regulations 2009* commenced and as a result the *Health (Legionella) Regulations 2001* were repealed.

The changes mean that the prescriptive requirements relating to warm water systems have been replaced with a general requirement to manage the risks associated with Legionella in certain premises. The 'certain premises' which the regulations apply to are:

- Aged care
- Health services
- Health service establishments
- Registered funded agencies
- Correctional services
- Commercial vehicle washes

(see pages 2 & 3)

Regulation 62 of the *Public Health and Wellbeing Regulations 2009* requires that the responsible person must take reasonable steps to manage the risks of Legionella in water delivery systems. The responsible person is any person who owns, manages, or controls the water delivery system.

A summary of the changes is available in the Bulletin produced by the Department of Health in March 2010:
http://www.health.vic.gov.au/environment/downloads/wds_bulletin_april2010.pdf

LEGIONELLA RISKS

Legionella is a common organism in the environment and can be found in very low concentrations in the drinking water supply. The Legionella bacteria are able to multiply when exposed to a suitable environment. With the exception of car wash facilities, the warm water systems associated with showers is going to be the major focus for managing the risks of Legionella in the premises listed on page 1.

RISK MANAGEMENT PLANS

The Department of Health recommends that the premises listed on page 1 should prepare a Legionella risk management plan for their warm water systems.

An assessment of other water delivery systems should also be conducted to identify any systems that store water at temperatures between 30°C and 60°C combined with producing respirable sized droplets to which people might be exposed. A risk assessment should then be conducted on those systems.

1. Undertake a site audit to locate, gather and document basic information about each warm water system.
2. Complete a template for basic assessment and review, documenting methods for addressing any identified issues or risks.
3. Keep accurate and detailed records of all maintenance work.
4. Develop a water sampling strategy and commence regular sampling for Legionella.
5. Develop a clear plan on what to do should Legionella be detected in a system.

Additional steps are recommended where more advanced assessment and management are indicated:

6. Complete a template for advanced assessment and management, documenting how any issues and risks identified will be addressed.
7. Develop a plan for management of the warm water system.

CAR WASHES

The *Public Health and Wellbeing Act 2008* and the *Public Health and Wellbeing Regulations 2009* commenced on 1 January 2010. Because a car wash facility was linked to 7 cases of Legionnaires' disease in 2008, these car wash facilities have been included in the list of certain premises that must control the risk of Legionella. Regulation 62 requires that the responsible person must take reasonable steps to manage the risks of Legionella in the delivery system located at the premises. The responsible person is any person who owns, manages, or controls the water delivery system.

The Act and regulations are available at: http://www.legislation.vic.gov.au/

What are the risks for a car wash facility?

Risk factors for Legionella growth in car washes are:

- Warm water stored at temperatures between 30°C and 60°C
- Rubber hosing
- Absence of a biocide (a chemical agent capable of destroying living organisms).

People may contract Legionnaires' disease if they are exposed to small droplets containing the bacteria, like those produced by high pressure spray hoses.

The Department of Health recommends that all car wash facilities assess the risks associated with their systems and prepare a Legionella risk management plan.

To manage the risks associated with Legionella, the following should be considered:

- Not using stored warm water at temperatures between 30°C and 60°C
- Replacing warm water storage with instantaneous units
- Replacing rubber hosing with poly tubing,
- metal tubing or clean copper tubing
- Regularly disinfecting the system with a chlorine based disinfectant.

For more details on managing the risks of Legionella in warm water systems, download a copy of the draft version Controlling Legionella in warm water systems 2010, available at: http://www.health.vic.gov.au/environment/downloads/controlling_legionella.pdf

You can also obtain further information from the Australian Car Wash Association at: http://www.acwa.net.au/

WATER TEMPERATURE GUIDELINES

The following Figures (1-7) provide a guide to different types of warm water systems (other than car washes).

FIGURE 1 - CLASSIFICATIONS OF WATER TEMPERATURES

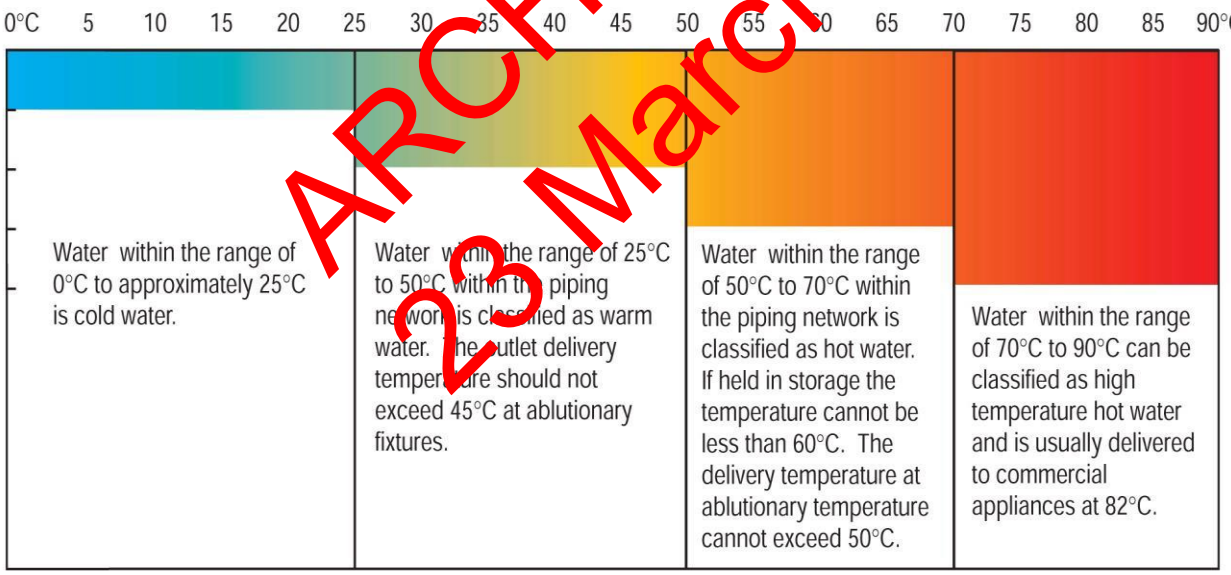
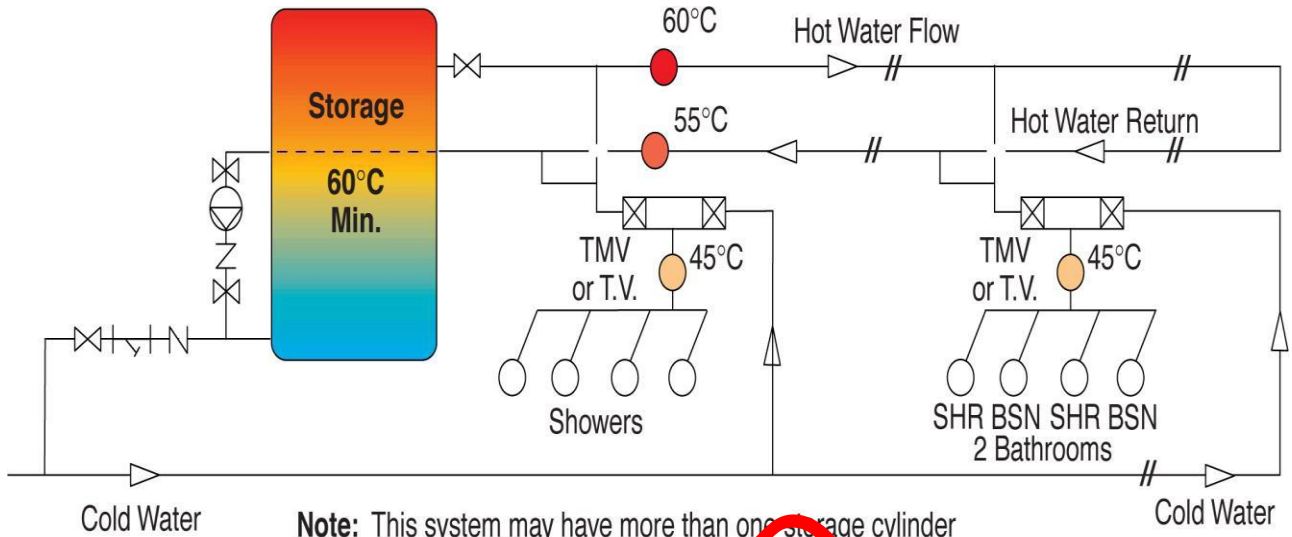


FIGURE 2 - STORAGE WARM WATER SYSTEM



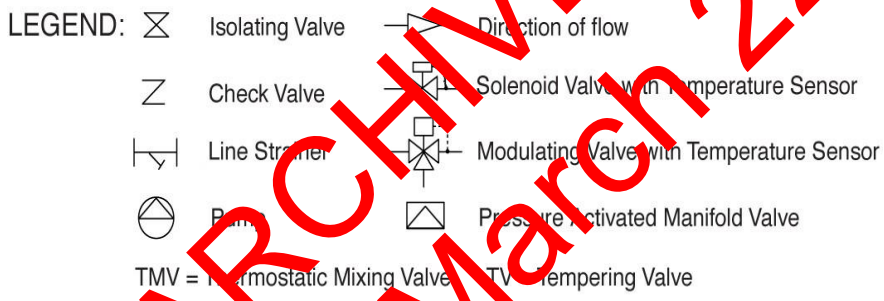
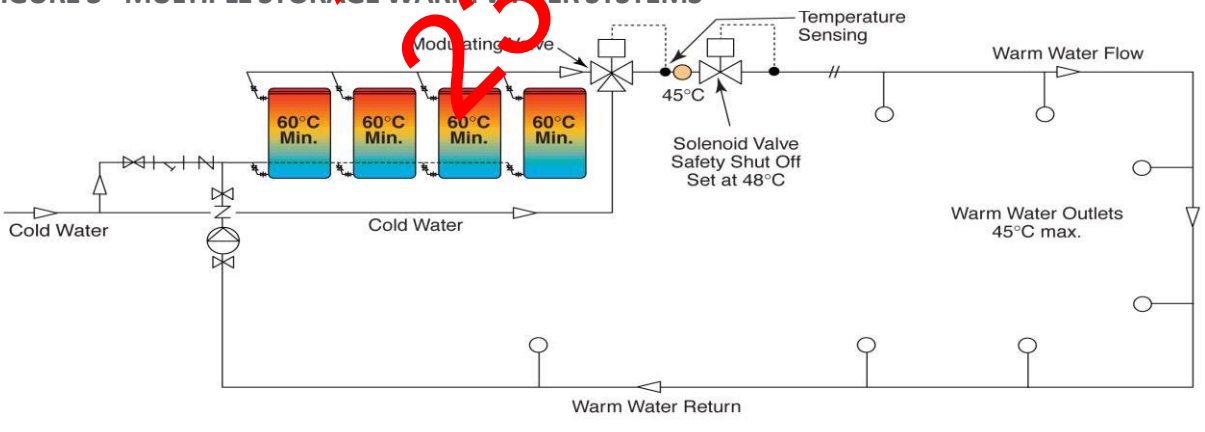


FIGURE 3 - MULTIPLE STORAGE WARM WATER SYSTEMS



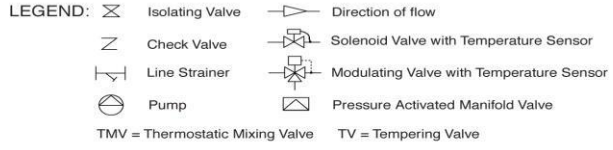


FIGURE 4 - WARM WATER SYSTEM

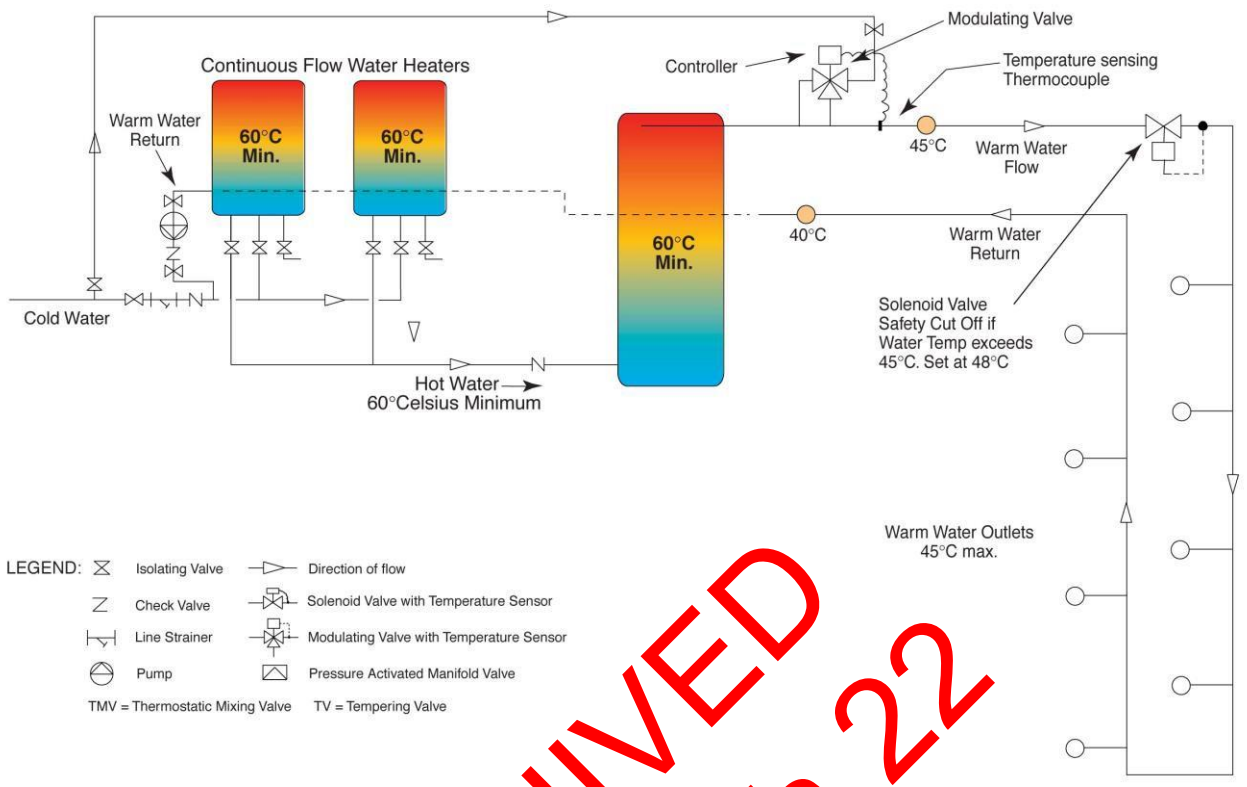
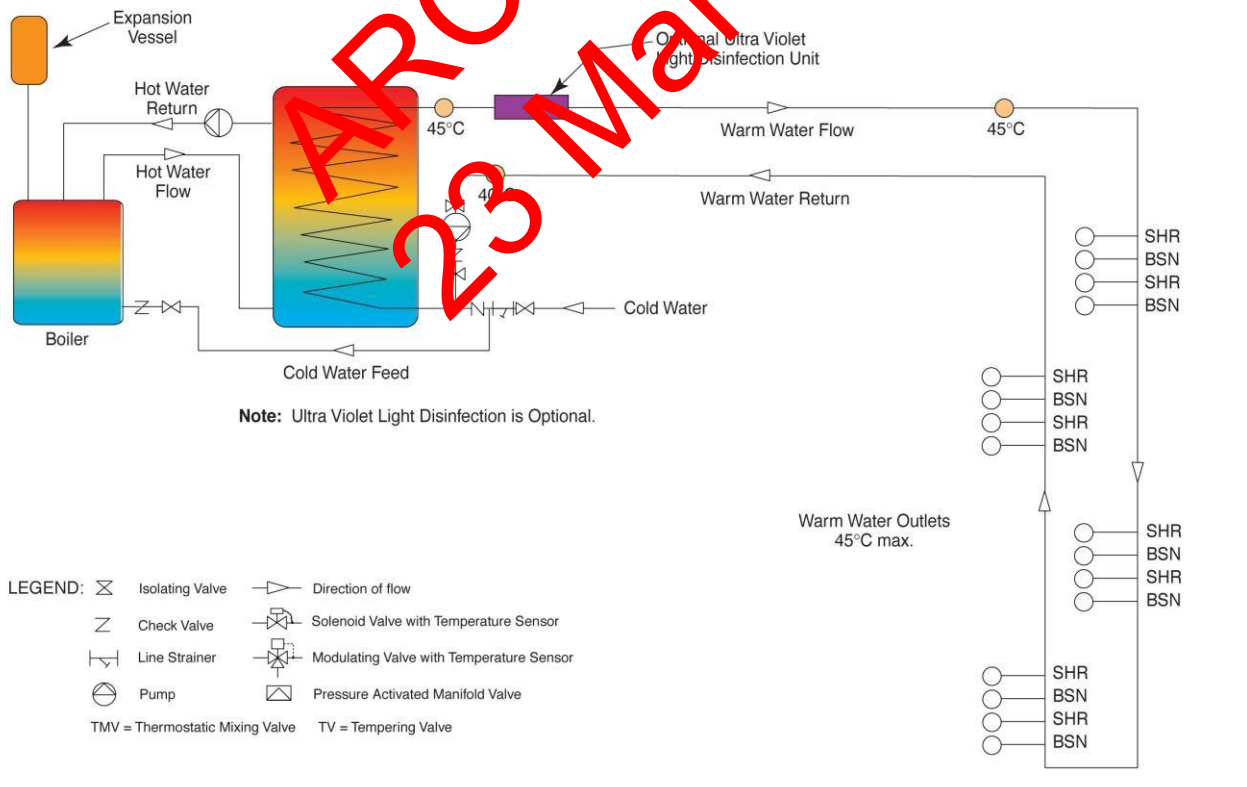


FIGURE 5 - WARM WATER INDIRECT SYSTEM



Note: Ultra Violet Light Disinfection is Optional.

FIGURE 6 - WARM WATER CONTINUOUS FLOW SYSTEM

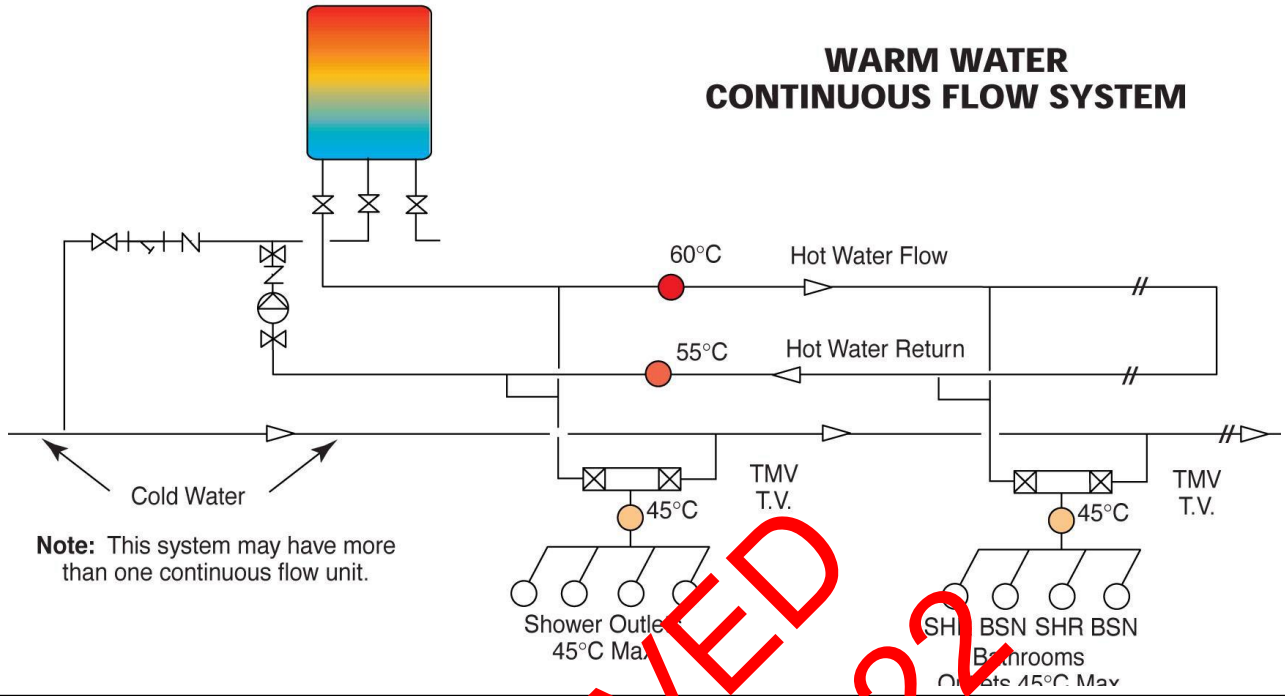
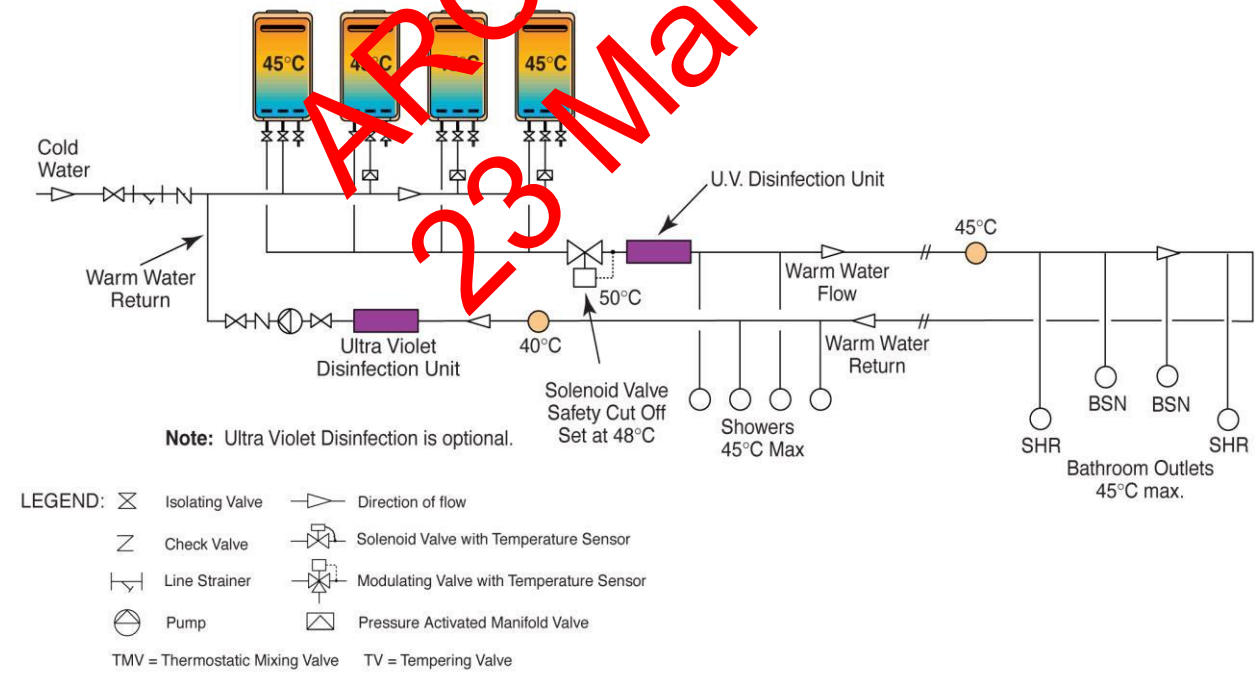


FIGURE 7 - MULTIPLE CONTINUOUS FLOW WARM WATER SYSTEM ELECTRONICALLY CONTROLLED TEMPERATURE HEATING SYSTEM



MAINTENANCE REQUIREMENTS FOR THERMOSTATIC MIXING VALVES

It is a requirement of ***AS/NZS 3500.4*** that thermostatic mixing valves "be inspected periodically to ensure proper operation". The VBA recommends that thermostatic mixing valves be inspected and serviced annually in accordance with ***AS 4032.3 Water supply- valves for the control of heated water supply temperatures Part 3: Requirements for field-testing, maintenance or replacement of thermostatic mixing valves, tempering valves and end-of-line temperature control devices***.

REFERENCES

- *Public Health and Wellbeing Act 2008*
- *Public Health and Wellbeing Regulations 2009*
- *Building (Legionella Risk Management) Regulations 2001*
- *Building Regulations 2006*

For further information refer to:
http://www.health.vic.gov.au/environment/legionella/waterdeliverysystems.htm