Technical guidance sheet 4.1

Safe drainage of temperature pressure relief valves – Potential hazards or unsafe installations

Solar Victoria

VICTORIA State Government

This guidance provides further information to support installers' understanding of applicable requirements in:

- AS/NZS 3500.2.2021 *Plumbing and Drainage Part 2: Sanitary Plumbing and Drainage*
- AS/NZS 3500.4.2021 *Plumbing and Drainage Part 4: Heated Water Services*
- National Construction Code (NCC) volume 3
- Plumbing Code of Australia (PCA)
- Plumbing Regulations 2018.

It is part of a series we commissioned TechSafe Australia to develop. The Victorian Building Authority has also reviewed this guidance. To help installers maintain standards, it includes installation advice, best practice solutions for specific scenarios, and examples of installations that may not be meeting the requirements relating to the safe drainage of temperature pressure relief valves.

The examples shown highlight compliant installations or specific defects. Some may also show other defects not identified in this guidance. As this guidance is general in nature, it must be read in conjunction with related material to ensure the context, relationship with other parts and anything not mentioned in this guidance is fully understood.

We also recognise there are different installation methods used to achieve compliance.

In series 4:

Potential hazards or unsafe installations

Assessing the installation

Before working on any storage heated water system, it is good practice to assess the location of the hot water cylinder (container) and the point where the temperature pressure relief (TPR) valve is to be terminated. Consider the surroundings, other services, and external influences likely to affect the installation. A good design practice will ensure a safe installation.

Consider these factors:

TPR valves require drain lines to meet several requirements in order to maintain safe discharge of heated water:

- A drain line that is discharging water on a hard surface may be a source of danger from splashing in various directions. This may be a concrete floor, tiles, masonry walls, safe trays, and other surrounding surfaces.
- The angle of the drain line at the termination point may not be suitably positioned to avoid injury from steam or hot water.
- Be aware of adjacent services such as electrical appliances and equipment with close vicinity to the discharge point as an unsafe electrical hazard could be created.
- A drain line originating at the TPR valve running vertically to a point of discharge directly below could be a cause of concern for the safety of the operator.
- Water discharging in the wrong area could create a slip hazard.

Examples of poor design

The following examples show installations that may present unsafe situations due to discharge of steam or hot water. This may create a hazard to persons in the vicinity of the installation.

Standards referenced

- AS/NZS 3500.4:2021 Clauses 5.8, 5.9.4, 5.11.1 and 5.11.3

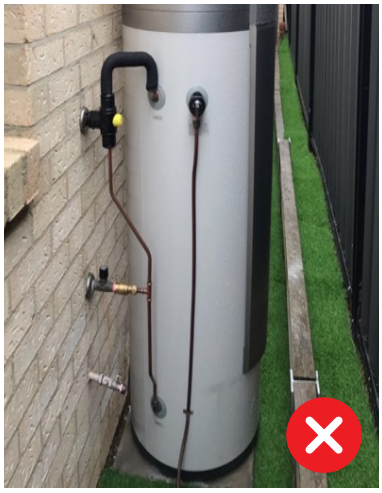

Figure 1:
The drain can be seen to be run vertically below the TPR valve and terminating at the ground, directly above the operator's feet.

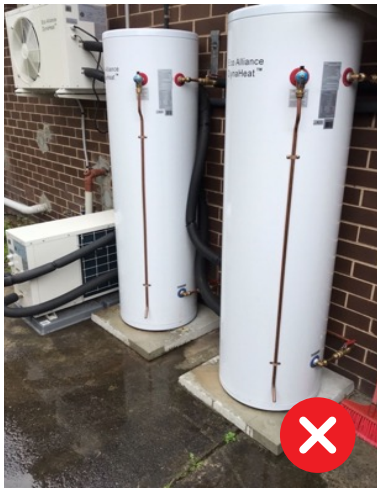

***Figure 2**:*
The drain termination points onto hard surface will cause hot water to be directed at various angles and may injure persons in the vicinity.

Figures 3 and 4:
Although an attempt to angle this drain termination point away, it is directed towards electrical equipment which could cause splashing of water or steam to enter the electrical terminal cover.

Figure 5:
The drain has been installed with an overflow relief which could force hot water horizontally at height if the drain downstream becomes blocked.

Potential hazards or unsafe installations

Examples of good practice

The following installations with descriptions show some good practice methods have been adopted when installing the drain.

Standards referenced

» AS/NZS 3500.4:2021 Clauses 5.8, 5.9.4, 5.11.1 and 5.11.3

Figure 6:
The drain is run from the container away from where the TPR will be operated.

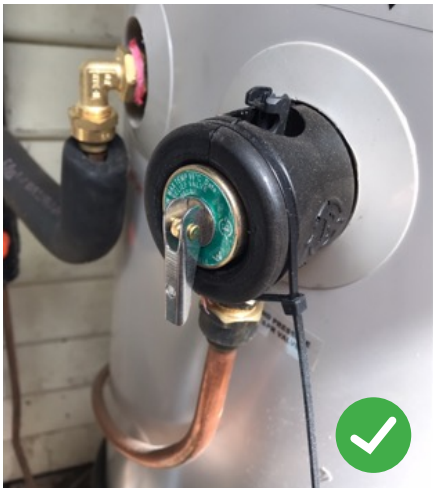

Figure 7:
The route of the drain run towards the opposite side away from operator to discharge in a safe direction.

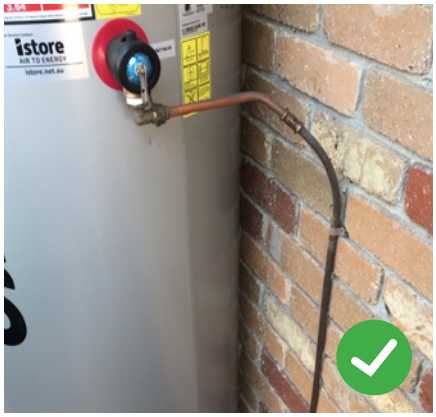

Figure 8:
With this installation the drain is terminated and angled in a suitable position preventing any concerns to persons nearby.

Documents referenced:

- Plumbing Regulations 2018
- National Construction Code (NCC) Volume Three (PCA)
- Plumbing Code of Australia (PCA)
- AS/NZS 3500.2.2021 *Plumbing and drainage Part 2 – Sanitary plumbing and drainage*
- AS/NZS 3500.4.2021 *Plumbing and drainage Part 4 – Heated water services*

More information

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