Building and Plumbing Newsflash 542

Back-flow prevention devices for rainwater tanks

Purpose

To advise on the installation and maintenance requirements for back-flow prevention devices with rainwater tanks in order to protect the drinking (town) water supply system.

Background

A back-flow prevention device is a plumbing product that prevents the reverse flow of water from a potentially polluted water source entering the drinking (town) water supply system so it does not become contaminated.

There are two broad categories of back-flow prevention devices—these being either a registered testable device or a non-testable device. A testable device needs to be registered with the local government and inspected and/or tested annually to ensure it is in good working order (using a Form 9—Report on inspection and testing of back-flow prevention device).

The selection and installation of an appropriate back-flow prevention device must be determined by identifying the hazard rating and its suitability for the particular situation. This is based on the assessment of a potential back-flow event and the risk of contamination to the drinking (town) water supply system.

There has been some uncertainty about the suitability of back-flow prevention devices required for some situations, particularly for rainwater tanks. Where a rainwater tank is connected to the drinking (town) water supply system, the suitability of the back-flow prevention device must be approved, typically by the local government.

A local government can require the owner or occupier of a premises to install, register, inspect, test, repair or replace a back-flow prevention device where it reasonably believes that plumbing on the premises could pollute either the water supply in the premises or the water service provider's water service to premises.

Rainwater tank is connected to a continuous supply of water from reticulated town water

Under the Queensland Development Code (QDC) for rainwater tanks (QDC 4.2 for residential buildings and QDC 4.3 for commercial buildings), where a rainwater tank supplies water to internal fixtures (toilets and washing machine) it requires a continuous supply of water from reticulated town water system by a water service provider. The reticulated town water must be protected from the rainwater tank supply. Under the QDC, this can be achieved by the installation of a back-flow

prevention device that:

- complies with the Australian Standard, or
- is a dual-check valve with an atmospheric port (DCAP).

While the Australian Standard (AS/NZS 3500.1:2003—Plumbing and drainage—Part 1: Water services (AS/NZS 3500.1)) provides some guidance for individual and zone protection based on a general hazard rating ('low', 'medium' or 'high'), for particular situations it does not identify the specific type of back-flow prevention device required with a rainwater tank.

Where a rainwater tank is installed on a property in a water service provider's area, a dual-check valve must be installed at the water meter for containment protection. The service provider may provide a water meter for the property that has an integral dual-check valve, and therefore no additional back-flow prevention is required at the water meter.

Rainwater tank is not connected to a continuous supply of water from reticulated town water

Where a rainwater tank is not connected to a continuous supply of water from reticulated town water, no back-flow prevention device is required as there is no risk of contamination given the rainwater tank is isolated from the reticulated town water supply. For example, where a rainwater tank is connected for outdoor use only or where a rainwater tank is the only supply of water to the dwelling (i.e. on properties that are not connected to the reticulated town water supply).

Application

Installation

The QDC variation from the Australian Standard has resulted in some confusion on the type of back-flow prevention device that can be installed for individual protection with a rainwater tank. Under the QDC, a DCAP can provide suitable back-flow prevention for rainwater tanks.

The local government may require a specific back-flow prevention device for a particular situation. However, the table below provides clarification on the type of back-flow prevention device that can be installed with a rainwater tank as an acceptable solution under the QDC. It can be used as a guide for plumbing practitioners and homeowners when providing individual protection for the rainwater tank.

Table: Type of back-flow prevention device for rainwater tanks permitted under QDC

Position of rainwater tank installation and method of continuous supply from reticulated town water system		**Back-flow prevention device— permitted QDC acceptable solutions**	
		Dual check valve (Dual CV)	**Dual check valve with atmospheric port (DCAP)**
Above ground	with automatic switching		✓
	with trickle top-up	✓*	✓*
Partially buried	with automatic switching		✓
	with trickle top-up		✓
Fully buried	with automatic switching		✓
	with trickle top-up		✓

Note:

* Under the Australian Standard, if a plumbing inspector (local government) is satisfied that a rainwater tank with an externally placed trickle top-up is a low hazard, then no back-flow prevention device may be required where there is a compliant air-gap (as this can be sufficient to address the risks associated with potential back-flow). However, a rainwater tank with an internal trickle top-up that does not comply with AS/NZS 3500.1 (Section 8) will require a DCAP.

A DCAP is designed to provide separation of water supplies and prevent cross-connection during a back-flow event. As a DCAP will leak in the event of back pressure or if the second check-valve is prevented from closing, it makes it easier to identity if the valve is failing and needs to be replaced.

As a DCAP is a non-testable device it does not need to be registered with the local government and inspected and/or tested annually. While there is a moderate cost difference between a dual-check valve and a DCAP, the DCAP will not need to be registered and inspected/tested annually.

Maintenance

Existing home and building owners located in a reticulated town water area that have a rainwater tank with a continuous supply of drinking water from town water should undertake periodic checks of their back-flow prevention device as part of the tank's maintenance. Where a rainwater tank was installed over five years ago they may wish to consider getting their back-flow prevention device assessed by a suitably qualified plumber to ensure it is still working properly.

Owners of existing homes and buildings with rainwater tanks that have installed a testable back-flow prevention device, for example a reduced pressure zone device (RPZD), double check valve (DCV) or dual check valve (Dual CV), maybe able to replace the device with a DCAP.

Where a testable back-flow prevention device is subject to an annual inspection, the property owner will need to inform their local government if they have replaced it with a DCAP (non-testable) so the device can be removed from the local government's back-flow register.

The plumber must have a 'back-flow prevention endorsement' on their license in order to check if the device is still in good working order. Where a back-flow prevention device is replaced the plumber must lodge a Form 4—Notifiable work.

More information

Further information about 'plumbing laws and codes' can be found at www.hpw.qld.gov.au.

Contact for further information

Building Codes Queensland
Building Industry and Policy
Department of Housing and Public Works
Email: buildingcodes@qld.gov.au

If you have not received this Newsflash directly from Building Codes Queensland, you can subscribe via bcqnewsflash@qld.gov.au.