

Requirements for installing temperature control devices

Guideline under the *Plumbing and Drainage Act 2018*

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Queensland
Government

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Purpose

The purpose of this guideline is to clarify the circumstances where a temperature control device is required to be fitted to a heated water system installed in Queensland.

Heated water delivered at 60°C takes one second to cause third-degree burns. By reducing the temperature of water delivery from hot taps to 45°C through the use of a temperature control device, it takes six hours to cause those burns.

The risk of scalding is far greater for people who are more vulnerable, such as those with a disability, older people and children, as they may have a reduced reaction time and thinner skin thickness.

Authority

This guideline is made under section 154 of the *Plumbing and Drainage Act 2018* ('the Act'). Under section 154(1), the chief executive may make guidelines for matters within the scope of the Act to help compliance with the Act.

Under section 154(2)(a) of the Act, the chief executive may make a guideline about carrying out plumbing or drainage work ('work'), including ways of complying with the code requirements for work.

The Act¹ requires a licensee who is carrying out work to have regard to guidelines that are relevant to carrying out work. If a licensee fails to have regard to a guideline that is relevant to work the licensee carries out, disciplinary action may be taken against the licensee².

The requirement to have regard to guidelines made under the Act extends to investigators appointed by the Queensland Building and Construction Commission, local governments and inspectors employed by local governments. Investigators and inspectors are required to have regard to a guideline that is relevant to performing their functions,³ and a local government must have regard to guidelines that are relevant to its administration of the Act⁴.

Background

Under section 9 of the Act, the code requirements for plumbing or drainage work include the requirements for the work set out in provisions of the Plumbing Code of Australia ('PCA') that are prescribed by a regulation.

Section 9 of the *Plumbing and Drainage Regulation 2019* prescribes provisions of the PCA as code requirements, including part B2 of the PCA. Part B2 sets out the circumstances where a temperature control device is required to be fitted to a heated water system. The part sets performance requirements requiring heated water to be delivered to sanitary fixtures used primarily for personal hygiene (bath, basins and showers) at a temperature that is unlikely to scald.

The 'Introduction to Part' ('the introduction'), located at the beginning of each part of the PCA introduces the main concepts dealt with in the part, including its scope which is mandatory. An 'Application' statement for each part, which is also mandatory, is provided to specify where or when a requirement or provision applies.

¹ Act, section 46(1).

² See the Act, section 49(1)(c).

³ See the Act, section 133 and section 141.

⁴ See the Act, section 138.

Part B2.5 of the PCA limits the delivery temperature of heated water at the outlet of sanitary fixtures. The application statement for the part states that the part only applies to a new heated water installation used for personal hygiene purposes.

Part B2.6 of the PCA specifies the types of temperature control devices that may be used to limit the delivery temperature of heated water. The application statement for the part states that the part only applies to new heated water installations.

In Queensland, the word 'new' has been interpreted to include 'like-for-like' replacements of existing hot water systems and other types of installation (Refer to Table). As a result of this approach, a Queensland variation deleted the application statements for both B2.5 and B2.6.

In the absence of application statements for Parts B2.5 and B2.6 for Queensland, this guideline clarifies the circumstances where a temperature control device is required to be fitted to a heated water system.

Definitions

The following are definitions of terms used in this guideline and defined in the Act or the PCA. However, as definitions may be changed from time to time, you should refer to a definition in the Act or the PCA before relying on the definition.

Definitions in *Plumbing and Drainage Act 2018*

Plumbing Code of Australia⁵ is the document in force from time to time called 'National Construction Code, volume 3—Plumbing Code of Australia' published by the Australian Building Codes Board.

plumbing work includes:

- (a) installing, changing, extending, disconnecting, taking away, maintaining and testing plumbing; and
- (b) installing a water meter, as part of a water service provider's infrastructure, to measure the volume of water supplied from the infrastructure to premises.

temperature control device⁶ means:

- (a) a mixing valve that automatically controls the temperature from a mixed water outlet to a preselected temperature using a thermostatic element or sensor; or
- (b) a mixing valve that is temperature activated and used to control a hot water supply with cold water to deliver hot water at a lower temperature at 1 or more outlet fixtures; or
- (c) another device installed to deliver hot water at a lower temperature at 1 or more outlet fixtures.

Definitions in *Plumbing Code of Australia*

Deemed-to-Satisfy Provisions means provisions which are deemed to satisfy the Performance Requirements.

Deemed-to-Satisfy Solution means a method of satisfying the Deemed-to-Satisfy Provisions.

Heated water means water that has been intentionally heated. It is normally referred to as hot water or warm water.

Performance Requirement means a requirement which states the level of performance which a Performance Solution or Deemed-to-Satisfy Solution must meet.

⁵ See the Act, section 8.

⁶ See the Act, section 72(2).

Performance Solution means a method of complying with the Performance Requirements other than by a Deemed-to Satisfy Solution.

Code requirements for temperature control devices

Compliance with the PCA is achieved by meeting the Performance Requirements of the PCA either through a Deemed-to-Satisfy Solution, a Performance Solution, or a combination of both.

The introduction for the PCA, Part B2 (Heated water services), provides that Part B2 sets out the Performance Requirements for the design, construction, installation, replacement, repair, alteration and maintenance of any part of a heated water service of a property that is connected to the drinking water supply. It applies from the point of connection to the points of discharge of the heated water service.

The PCA, Part BP2.2 is a Performance Requirement that requires heated water supplied by a new heated water service to be delivered to fixtures and appliances at a temperature that is unlikely to scald. Part BP2.2, Application 1 limits Part BP2.2 by providing that it only applies to fixtures and appliances used primarily for personal hygiene ('sanitary fixtures'⁷).

Part BP2.5 of the PCA requires heated water to be stored and delivered under conditions that avoid the likelihood of the growth of Legionella bacteria.

The PCA provides the following Deemed-to-Satisfy provisions to address Performance Requirements BP2.2 and BP2.5:

B2.5 Maximum delivery temperature

- (1) The delivery temperature of heated water at the outlet of each sanitary fixture must be:
- (a) not more than 45°C in any—
 - (i) residential part of an aged care building; or
 - (ii) patient care area in a health-care building; or
 - (iii) part of an early childhood centre, or primary or secondary school, that is used by children; or
 - (iv) designated accessible facility in a common area of a Class 2 building, or in any part of a Class 3, 5, 6, 7, 8, 9a, 9b, 9c or 10 building⁸; or
 - (b) not more than 50° C in all other cases.

B2.6 Temperature control devices

- (1) A temperature control device used to deliver heated water in accordance with B2.5(1)(a) must be a:
- (a) thermostatic mixing valve; or
 - (b) thermostatically controlled tap.
- (2) A temperature control device used to deliver heated water in accordance with B2.5(1)(b) must be a:
- (a) thermostatic mixing valve; or
 - (b) thermostatically controlled tap; or
 - (c) tempering valve; or
 - (d) temperature limited water heater.
- (3) The required maximum delivery temperature must be achieved in accordance with AS/NZS 3500.4.

⁷ Examples of sanitary fixtures are showers, baths and handwashing basins.

⁸ For the definitions of these classes of building, see the PCA.

Applying code requirements for temperature control devices in Queensland

In the absence of application statements for Parts B2.5 and B2.6 for Queensland, the following sections of the guideline clarify the circumstances where a temperature control device is required to be fitted to a heated water system.

General rule

A temperature control device of a type mentioned in Part B2.6 of the PCA must be installed to limit the temperature of heated water delivered from a heated water service on premises to fixtures primarily used for personal hygiene if:

- (a) a heated water service is installed for the premises for the first time; or
- (b) the water heater forming part of an existing heated water service is—
 - (i) replaced with a like-for-like water heater; or
 - (ii) replaced with a different type of water heater; or
 - (iii) relocated, and is reconnected to, some or all of the sanitary fixtures to which it was previously connected; or
- (c) more than one existing sanitary fixture is replaced with new similar fixtures; or
- (d) an existing heated water service on the premises is altered or extended to serve additional sanitary fixtures.

Note: For paragraph (d), the requirement to fit the temperature control device only applies for the additional sanitary fixtures.

Exemption for manifold bank of water heaters

Despite the general rule, a temperature control device does not need to be installed if—

- (a) one or more, but not all, heating units (the **relevant heating units**) in a manifold bank of water heaters are replaced as part of a single transaction; and
- (b) the remaining heating units—
 - (i) remain operational while the relevant heating units are being replaced; and
 - (ii) are not replaced in the following 12-month period.

Note: Refer to the table below for further guidance on when a temperature control device must be fitted for each sanitary fixture.

Requirements for a temperature control device (TCD) to be fitted

	Heated water work undertaken	TCD required
1	Installing a water heater for premises for the first time	Yes
2	Replacing an existing water heater with a like-for-like water heater	Yes
3	Replacing an existing water heater with a different type of water heater Example: an electric water heater is replaced by a gas water heater	Yes
4	Relocating and reconnecting water heater to some or all sanitary fixtures to which it was previously connected	Yes
5	Replacing more than one existing sanitary fixture with similar fixtures Example: in a bathroom renovation, two or more sanitary fixtures are replaced, including the basin, bath and shower	Yes
6	Altering or extending an existing heated water service on the premises to serve additional sanitary fixtures Example: a new ensuite bathroom is built for existing premises and the heated water service is altered or extended to serve the basin and shower in the ensuite (the requirement only applies for the additional sanitary fixtures).	Yes
7	Replacing a single sanitary fixture (including tap ware) with the same type of fixture	No
8	Replacing solar collector panels only	No
9	Replacing any valve associated with a water heater (other than a temperature control device), or an element or thermostat Example: an isolation valve, a temperature and pressure relief valve, an expansion control valve	No
10	Replacing one or more, but not all, water heaters forming part of a manifold bank of heaters Refer to 'Exemption for manifold bank of water heaters' (page 6)	No
11	Replacing all water heaters forming part of a manifold bank of heaters within a 12-month period <i>Scenario: there are 6 heating units in a manifold of water heaters.</i> Example 1: all 6 heating units are replaced at the same time Example 2: the 6 heating units are replaced at different times within a 12 month period	Yes

Additional information

- Information in the Table provides the minimum requirements for when a TCD is required to be fitted.
- Although it is not mandatory for a TCD to be fitted in the circumstances set out in items 7 to 10, it is recommended that the option of installing a TCD in those circumstances be considered.
- The requirements to install a TCD apply only in relation to sanitary fixtures. The requirements do not apply to other fixtures, for example a kitchen or laundry fixture. Therefore, installing temperature control devices for these fixtures is optional.