



# **WMTS-453:2016**

## **Heated water systems – Thermostatic circulation valve**

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**WaterMark Technical Specification**

**2016**



**ABC**





**WMTS-453:2016**

**Heated water systems – Thermostatic circulation valve**

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**WaterMark Technical Specification**

Document formerly known as:-

ATS 5200.453 – 2004 Technical Specification for Plumbing and Drainage Products  
Heated water systems - Thermostatic circulation valve

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First published as ATS 5200.453—2004.  
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**2016**

## **IMPORTANT NOTICE AND DISCLAIMER**

On 25 February 2013 management and administration of the WaterMark Certification Scheme transferred to the Australian Building Codes Board (ABCB). From this date all new technical specifications will be named WaterMark Technical Specifications (WMTS). Within two years all existing ATS will be renamed WMTS. During this initial period both terms may be used and accepted. All new and recertified Certificates of Conformity will reference WMTS. Certificates of Conformity that currently reference ATS will be re-issued referencing the equivalent WMTS during this initial period. The WaterMark Schedule of Specifications lists all current WMTS and, where appropriate, the former ATS name.

This Technical Specification supersedes Standards Australia ATS 5200.453 – 2004.

The rebranding of this Technical Specification has included additional information about the transition as well as changes to specific details including replacing references to Standards Australia and the National Plumbing Regulators Forum (NPRF) with the ABCB, changing the term Australian Technical Specification (ATS) to WaterMark Technical Specification (WMTS), replacing references to technical committees WS-014 and WS-031 with the WaterMark Technical Advisory Committee (WMTAC).

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The ABCB welcomes suggestions for improvement in the WMTS, and encourage readers to notify us immediately of any apparent inaccuracies or ambiguities. Contact the ABCB via phone on 1300 134 631, email at [watermark@abcb.gov.au](mailto:watermark@abcb.gov.au) or write to the WaterMark Administering Body, ABCB, GPO Box 9839, Canberra ACT 2601.

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## PREFACE

WaterMark Technical Specification WMTS-453: 2016 Technical Specification for plumbing and drainage products, Heated water systems - Thermostatic circulation valve was originally prepared by the Joint Standards Australia/Standards New Zealand Committee WS-031, Technical Procedures for Plumbing and Drainage Products Certification.

The objective of this Technical Specification is to enable product certification in accordance with the requirements of the Plumbing Code of Australia (PCA).

The word 'VOID' set against a clause indicates that the clause is not used in this Technical Specification. The inclusion of this word allows a common use clause numbering system for the WaterMark Technical Specifications.

The term 'normative' has been used in this Technical Specification to define the application of the appendices to which they apply. A 'normative' appendix is an integral part of a Technical Specification.

The test protocol and information in this Technical Specification was arranged by committee members to meet the authorization requirements given in the PCA.

The WaterMark Schedule of Specifications and List of Exempt Products are dynamic lists and change on a regular basis. Based on this function, these lists have been removed from the WaterMark Certification Scheme document known as Technical Specification for Plumbing and Drainage Products and are now located on the ABCB website ([www.abcb.gov.au](http://www.abcb.gov.au)). These lists will be version controlled with appropriate historic references.

## **ACKNOWLEDGEMENTS**

Australian Technical Specification ATS 5200.453 – 2004, on which this technical specification is based, was prepared by Standards Australia Committee WS-031, Technical Procedures for Plumbing and Drainage Products Certification. It was approved on behalf of the Council of Standards Australia on 26 September 2003.

The following organisations were represented on Committee WS-031 in the preparation of Australian Technical Specification ATS 5200.453 – 2004.

- AUSTAP
- Australian Industry Group
- Certification Bodies (Australia)
- Copper Development Centre—Australia
- Fire Contractors Federation
- Master Plumbers, Gasfitters and Drainlayers New Zealand
- New Zealand Water and Waste Association
- Plastics Industry Pipe Association of Australia
- Plumbing Industry Commission
- South Australian Water Corporation
- Water Services Association of Australia

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## **1 SCOPE**

This Technical Specification sets out requirements for thermostatic circulation valves that are used in hot water recirculation systems.

## **2 APPLICATION**

This Technical Specification will be referenced on the WaterMark Certification Scheme Schedule of Specifications.

Appendix A sets out the means by which compliance with this Technical Specification can be demonstrated by a manufacturer for the purpose of product certification.

## **3 REFERENCED DOCUMENTS**

The following documents are referred to in this Specification:

AS

- 2345      Dezincification resistance of copper alloys
- 3688      Water supply—Copper and copper alloy body compression and capillary fittings and threaded-end connectors
- 4032      Water supply—Valves for the control of hot water supply temperatures
- 4032.2    Part 2: Tempering valves and end-of-line temperature-activated devices

AS/NZS

- 3500      Plumbing and drainage
- 3500.0    Part 0: Glossary of terms
- 4020      Testing of products for use in contact with drinking water

## **4 DEFINITIONS**

For the purpose of this Technical Specification, the definitions given in AS/NZS 3500.0 apply.

## **5 MATERIALS**

All materials shall comply with AS 4032.2

## **6 MARKING**

Valves shall be marked with the following:

- (a)      Manufacturer's name, brand or trademark.
- (b)      WaterMark.

- (c) Licence number.
- (d) Direction of flow.
- (e) The number of this Technical Specification, i.e., WMTS-453.

## **7 VOID**

## **8 DESIGN**

### **8.1 End connection**

Threaded end connectors for connection to either pipes or fittings shall comply with AS 3688.

## **9 PERFORMANCE REQUIREMENTS AND TEST METHODS**

### **9.1 Products contact with drinking water**

When tested with the application of a scaling factor of 0.1, thermostatic circulation valves shall comply with AS/NZS 4020.

### **9.2 Torque test**

The torque test shall be in accordance with AS 4032.2, Appendix B.

### **9.3 Leakage test**

The leakage test shall be in accordance with AS 4032.2, Appendix E.

### **9.4 Endurance**

The endurance test shall be in accordance with AS 4032.2, Appendix F.

## **10 VOID**

## **11 PRODUCT DOCUMENTATION**

### **11.1 Product data**

Product data shall be available and it shall identify critical product characteristics such as—

- (a) flow rate and pressure drop; and
- (b) temperature stability.

## **11.2 Installation instructions**

Installation instructions shall be provided, which shall give full details of the installation procedure of the thermostatic circulation valves, including the need for special tools/training. The instructions shall also include a warning that it is not to be used as an end-of-line temperature-control device.

## **Appendix A MEANS FOR DEMONSTRATING COMPLIANCE WITH THIS TECHNICAL SPECIFICATION**

(Normative)

### **A.1 SCOPE**

This Appendix sets out the means by which compliance with this Technical Specification can be demonstrated by a manufacturer under the WaterMark product certification scheme where Level 1 certification is applied.

### **A.2 RELEVANCE**

The long-term performance of plumbing systems is critical to the durability of building infrastructure, protection of public health and safety, and protection of the environment.

### **A.3 PRODUCT CERTIFICATION**

The purpose of product certification is to provide independent assurance of the claim by the manufacturer that products comply with this Technical Specification.

The certification scheme serves to indicate that the products consistently conform to the requirements of this Technical Specification.

The frequency of the sampling and testing plan as detailed in Paragraph A5, shall be used by the WaterMark Conformity Assessment Body.

### **A.4 DEFINITIONS**

#### **A.4.1 Batch release test**

A test performed by the manufacturer on a batch of components, which has to be satisfactorily completed before the batch can be released.

#### **A.4.2 Production batch**

Clearly identifiable collection of units, manufactured consecutively or continuously under the same conditions, using material or compound to the same specification.

#### **A.4.3 Sample**

One or more units of product drawn from a batch, selected at random without regard to quality.

*NOTE: The number of units of product in the sample is the sample size.*

#### **A.4.4 Sampling plan**

A specific plan that indicates the number of units of components or assemblies to be inspected as defined in Clause 8.

#### **A.4.5 Type test batch**

Schedule of units of the same type, identical dimensional characteristics, all the same size, from the same compound. The batch is defined by the manufacturer.

#### **A.4.6 Type testing**

Testing performed to demonstrate that the material, component, joint or assembly is capable of conforming to the requirements given in the Technical Specification

### **A.5 TESTING**

#### **A.5.1 Batch release testing**

Table A2 sets out the minimum sampling and testing frequency plan for a manufacturer to demonstrate compliance of product(s) to this Technical Specification on an ongoing basis. However, where the manufacturer can demonstrate adequate process control to the WaterMark Conformity Assessment Body, the frequency of the sampling and testing nominated by the manufacturer's quality plan and/or documented procedures shall take precedence for the purposes of WaterMark product certification.

#### **A.5.2 Retesting**

In the event of a test failure, the products within the batch shall be tested at an appropriate acceptable quality level (AQL) and only those batches found to comply may be claimed and/or marked as complying with this Technical Specification.

#### **A.5.3 Type testing**

Table A1 sets out the requirements for type testing and frequency of re-verification.

**Table A1—TYPE TESTS**

<b>Characteristic</b>	<b>Clause</b>	<b>Requirement</b>	<b>Test method</b>	<b>Frequency</b>
Materials	5	Composition	AS 4032.2	At any change in materials specification
Marking	6	Marking	Visual inspection	At any change in marking process
Design	8.1	End connectors AS 3688	Measurement	At any change in the design
	8.2	Flow rate and pressure drop	Check against manufacturer's warranty	
	8.3	Temperature stability	Check against manufacturer's warranty	
Performance	9.1	Products in contact with drinking water	AS/NZS 4020	At any change in materials, formulation or design or every 5y, whichever occurs first
	9.2	Torque test	AS 4032.2 Appendix B	At any change in the design
	9.3	Water tightness test	AS 4032.2 Appendix E	
	9.4	Endurance	AS 4032.2 Appendix F	
Product documentation	11.1	Product data	Visual inspection	At any change in the design
	11.2	Installation instructions	Visual inspection	At any change factors that require a change in documentation, e.g, amendments to AS/NZS 3500 series of Standards

**Table A2— BATCH RELEASE TESTS**

<b>Characteristic</b>	<b>Clause</b>	<b>Requirement</b>	<b>Test method</b>	<b>Frequency</b>
Materials	5	Composition	Supplier's test certificate	One sample per batch
Markings	6	Markings	Visual examination	100%
Design	8.1	End connections	Direct measurement	One sample per batch
Performance	9.3	Water tightness test	AS 4032.2, Appendix E	100%
Product documentation	9.2	Installation instructions	Visual	100%

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