WMTS-468:2019

Hot water systems - Recirculation valves

WaterMark Technical Specification

2019

ABCB

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WaterMark Technical Specification

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Hot water systems – Recirculation valves

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2019

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). The WaterMark Schedule of Products lists all current WMTS.

This Technical Specification supersedes WaterMark Technical Specification WMTS-468:2016.

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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 or write to the WaterMark Administering Body, ABCB, GPO Box 2013, Canberra ACT 2601.

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PREFACE

WaterMark Technical Specification WMTS-468: 2016 Technical Specification for plumbing and drainage products, Hot water systems – Recirculation valves 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).

WaterMark Technical Specification WMTS-468:2019 Technical Specification for plumbing and drainage products, Hot water systems – Recirculation valves, incorporates an amendments to Clause 9.1, AS/NZS 4020 scaling factor.

The objective of this revision is to provide a constant scaling factor for in-line devices in accordance with other Australian Standards incorporating in-line valves.

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 Products and Schedule of Excluded 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). These lists will be version controlled with appropriate historic references.

ACKNOWLEDGEMENTS

Australian Technical Specification ATS 5200.468 – 2005, 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 28 January 2005.

The following organisations were represented on Committee WS-031 in the preparation of Australian Technical Specification ATS 5200.468 – 2005.

- AUSTAP
- Australian Electrical and Electronic Manufacturers Association
- Australian Industry Group
- Certification Interests (Australia)
- Consumer Electronics Suppliers Association
- Copper Development Centre, Australia
- CSIRO Manufacturing & Infrastructure Technology
- Gas Appliances and Services Association
- Master Plumbers and Mechanical Services Association of Australia
- Master Plumbers Australia

WaterMark Technical Specification WMTS-468:2019 was prepared by industry and reviewed by the ABCB WaterMark Technical Advisory Committee. It was approved by the Administering Body on 22 July, 2019.

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1 SCOPE

This Technical Specification specifies requirements for valves that are utilized to control the temperature in hot water recirculation systems through balancing of the flow.

2 APPLICATION

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

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

3 REFERENCED DOCUMENTS

The following documents are referred to in this Technical Specification:

AS

1432	Copper tubes for plumbing, gasfitting and drainage applications
1565	Copper and copper alloys—Ingots and castings
1572	Copper and copper alloys—Seamless tubes for engineering purposes
2136	Method for detecting the susceptibility of copper and its alloys to stress corrosion cracking using the mercurous nitrate test
2345	Dezincification resistance of copper alloys
2738	Copper and copper alloys—Compositions and designations of refinery products, wrought products, ingots and castings
3688	Water supply—Copper and copper alloy body compression and capillary fittings and threaded-end connectors
4032.2	Water supply—Valves for the control of hot water supply temperatures Part 2: Tempering valves and end-of-line temperature-actuated devices

AS/NZS

1567	Copper and copper alloys—Wrought rods, bars and sections
1568	Copper and copper alloys—Forging stock and forgings
3500.0	Plumbing and Drainage Part 0: Glossary of terms
3500.1	Plumbing and Drainage Part 1: Water services
4020	Testing of products for use in contact with drinking water

NCC

PCA Plumbing Code of Australia

4 DEFINITIONS

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

5 MATERIALS

5.1 Copper

Copper shall comply with the following:

(a) *Wrought products* AS 2738.

(b) *Tubular components* Copper tube shall comply with AS 1432.

5.2 Copper alloy

Copper alloy shall comply with the following:

(a) *Castings* AS 1565 or capable of passing the requirements of Clause 5.3 provided that the alloy contains not less than 58% copper and not more than 1% aluminium.

(b) *Hot pressings* AS/NZS 1568 or an alloy complying with AS 2345.

(c) *Rod for machined parts* AS/NZS 1567 or an alloy complying with AS 2345.

(d) *Tubular components* Copper alloy tube shall comply with AS 1572 alloy designation C26130. Where bent or stamped in the fabrication process, the tube shall be sufficiently stress-relieved so that it is capable of passing the mercurous nitrate test specified in AS 2136 after all fabrication processes are complete.

5.3 Dezincification-resistant (DR) copper alloy

Copper alloys in contact with water shall comply with AS 2345.

5.4 Stainless steel

Stainless steel shall be Grade 304 or 316 complying with the relevant ASTM Standard for the product form.

5.5 Plastics

Plastic materials under hydrostatic pressure shall be able to demonstrate suitability at the maximum operating pressure and temperature for the intended life of the product.

NOTE: It is an expectation that the minimum life of the product would be 15 years.

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-468.

7 PACKAGING

Void.

8 DESIGN

8.1 End connections

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

9 PERFORMANCE REQUIREMENTS AND TEST METHODS

9.1 Products in contact with drinking water

The device shall comply with the requirements of AS/NZS 4020. A scaling factor of 0.01 shall be applied.

9.2 Body torque test

The valve shall comply with the requirements of AS 4032.2.

9.3 Body leakage test

The valve shall comply with the requirements of AS 4032.2.

9.4 Endurance

When tested in accordance with AS 4032.2, Appendix G, for 25 000 cycles, the actuating temperature shall not deviate from the initial setting by more than +5, –0 8°C.

10 TEST SEQUENCE AND TEST SAMPLE PLAN

Void.

11 PRODUCT DOCUMENTATION

11.1 Product data

Product data that identifies critical product characteristics, such as flow rate and pressure drop, shall be available.

11.2 Installation and maintenance instructions

11.2.1 Installation instructions

Installations instructions that give full details of a valve installation procedure shall be provided, and shall include the following:

(a) Reference to installation in accordance with the Plumbing Code of Australia, including any limitations on the product's use.

NOTE:-A material or product that is listed on the WaterMark Product Database and is marked in accordance with the WaterMark Certification Scheme is recognised by authorities having jurisdiction as being authorised for use in a plumbing or drainage installation. This is because the material or product complies with the applicable product specification. The installation of an authorised material or product must meet the requirements of the PCA. Where the installation does not comply with the PCA installation requirements, or where the PCA does not contain installation requirements applicable to the authorised material or product, acceptance of the installation is at the discretion of the authority having jurisdiction.

(b) Detailed step-by-step instructions.

(c) The need for special tools or training.

(d) Commissioning procedures and adjustments required.

(e) Troubleshooting guide.

(f) Contact details for after-sales service.

11.2.2 Operating and maintenance instructions

Instructions shall be provided to include—

(a) troubleshooting guide; and

(b) contact details for after-sales service.

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 Certification Scheme.

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 products consistently conform to the requirements of this Technical Specification.

The sampling and testing plan, as detailed in Paragraph A5 and Table A1, shall be used by the WaterMark Conformity Assessment Body. Where a batch release testing program is required, it shall be carried out by the manufacturer as detailed in Paragraph A5 and Table A2.

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.

A.4.5 Type test batch

Schedule of units of the same type, identical dimensional characteristics, all the same nominal diameter and wall thickness, from the same compound. The batch is defined by the manufacturer.

A.4.6 Type testing (TT)

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 Type testing

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

A.5.2 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.5.3 Retesting

In the event of a batch release test failure, the products within the batch may be retested at a frequency agreed to with the WaterMark Conformity Assessment Body and only those batches found to comply may be claimed and/or marked as complying with this Technical Specification.

Table A1—TYPE TESTS

Characteristic	Clause	Requirement	Test method	Frequency
Materials	5	Materials	Review materials parts lists and compliance certificates	At any change in materials specification
Design	8.1	End connections to AS 3688	Measurement	At any change in the design
Performance	9.1	Products in contact with drinking water	AS/NZS 4020	At any change in materials
	9.2	Torque test	AS 4032.2 Appendix B	At any change in the design
	9.3	Body leakage	AS 4032.2 Appendix C	
	9.4	Endurance	AS 4032.2 Appendix G	
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

Characteristic	Clause	Requirement	Test method	Frequency
Materials	5	Composition etc.	Delivery acceptance tests or supplier's quality certificate	Each delivery batch
Design	8.1	End connections	AS 3688/Direct measurement	Once per batch
Performance	9.3	Body leakage	AS 4032.2 Appendix C	100%

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