



WMTS-464:2016

Hot water manual or sensor-activated pumping systems

WaterMark Technical Specification

2016



ABC



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Hot water manual or sensor-activated pumping systems

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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 5200.464 – 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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PREFACE

WaterMark Technical Specification WMTS-464: 2016 Technical Specification for plumbing and drainage products, Hot water manual or sensor-activated pumping systems 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). These lists will be version controlled with appropriate historic references.

ACKNOWLEDGEMENTS

Australian Technical Specification ATS 5200.464 – 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 3 May 2004.

The following organisations were represented on Committee WS-031 in the preparation of Australian Technical Specification ATS 5200.464 – 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 a demand-activated hot water pumping system for use in a dedicated plumbing hot water supply recirculation line.

2 APPLICATION

The system moves hot water from the water heater to end of line fittings activated 'on demand' to save water and energy where it is permitted by the authority having jurisdiction.

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

- 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
- 4087 Metallic flanges for water works purposes

AS/NZS

- 1567 Copper and copper alloys—Wrought rods, bars and sections
- 1568 Copper and copper alloys—Forging stock and forgings
- 3500 Plumbing and drainage

- 3500.0 Part 0: Glossary of terms
- 3500.1 Part 1 Water services
- 4020 Testing of products for use in contact with drinking water

IAPMO

- PS 115 Material and property standard for hot water demand or automatic activated hot water pumping systems

4 DEFINITIONS

For the purpose of this Standard, the definitions given in AS/NZS 3500.0 and IAPMO PS115 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 3.3 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

Each system shall be permanently and legibly marked with the following:

- (a) Manufacturer's name, brand or trademark.
- (b) WaterMark.
- (c) Licence number.
- (d) Batch identification, e.g., date of manufacture or individual serial number.
- (e) The number of this Specification, i.e., WMTS-464.

7 VOID

8 DESIGN

8.1 End connectors

End connectors for connection to copper or copper alloy pipes or fittings shall comply with AS 3688. Other connection ends shall comply with the requirements relevant to the connection.

8.2 Cross-flow

Flow of water in both directions shall be prevented when the system is inactive.

8.3 Control strategy

Evidence shall be provided to demonstrate that the device will operate safely or fail in a safe mode when subjected, but not limited, to the following:

- (a) Incorrect electrical installation.
- (b) Failure of temperature sensor.

9 PERFORMANCE REQUIREMENTS AND TEST METHODS

9.1 Products in contact with drinking water

Products in contact with drinking water shall comply with AS/NZS 4020. A scaling factor of 0.1 shall be applied.

9.2 Endurance/Life test

Systems with moving parts shall be subjected to an endurance/life test in accordance with IAPMO PS 115.

9.3 Intermittent shock test

The system shall be tested in accordance with, and shall comply with the requirements of, IAPMO PS 115.

9.4 Operational test—System shuts down on sensing temperature rise

The system shall be tested in accordance with, and shall comply with the requirements of, IAPMO PS 115.

10 VOID

11 PRODUCT DOCUMENTATION

11.1 Product data

Product data shall be available, which shall identify critical product characteristics, such as—

- (a) physical size and componentry;
- (b) delivery flow rate;
- (c) pressure/temperature or other limitations; and
- (d) suitable hot water installations and any limitations.

11.2 Installation and maintenance instructions

11.2.1 Installation instructions

Installation instructions shall be provided, which shall provide details of the system's installation procedure, including the following:

- (a) Reference to installation in accordance with AS/NZS 3500.1.

- (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 *Maintenance instructions*

Maintenance instructions shall be provided, which shall include—

- (a) any regular maintenance requirements;
- (b) spare parts information;
- (c) troubleshooting guide; and
- (d) contact details for after-sales service.

11.2.3 *Operating instructions*

Consumer operating instructions shall be provided in a form suitable for display at the location of installation, e.g., within the vanity cabinet.

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 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.

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, which indicates the number of units of components or assemblies to be tested.

A.4.5 Type test batch

Schedule of units of the same type and nominal size. 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 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 test failure, the products within the batch shall be 100% tested 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 connectors – AS 3688 or relevant connection	Dimensional assessment	At any change in the design
	8.2	Cross-flow	Design review	
	8.3	Over temp. shut-off		
	8.4	Control strategy		
Performance	9.1	Products in contact with drinking water	AS/NZS 4020	At any change in materials, formulation or design, or every five years, whichever occurs first
	9.2	Endurance/Life test	IAPMO PS115	At any change in design or manufacturing process
	9.3	Intermittent shock test	IAPMO PS115	
	9.4	Operational test – shut-off	IAPMO PS115	
Product documentation	11	Product data/installation/maintenance instructions	Documentation review	At any change to installation requirements

Table A2— BATCH RELEASE TESTS

Characteristic	Clause	Requirement	Test method	Frequency
Materials	5	Composition, DR, temper, etc	Delivery acceptance tests or supplier's quality certificate	Each delivery batch
Marking	6	Marking	Visual examination	100%
Design	8.1	End connectors	AS 3688 or relevant connection	One sample per production batch
Performance	9.4	Operational test	IAPMO PS115*	100%

* Where an equivalent test has been established to detect faults within the assembly and general operation, it may be utilized in place of the formalized operational test.

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