



# **WMTS-037.1:2016**

## **Flow controllers – For controlling flows in cold or heated water systems**

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**WaterMark Technical Specification**

**2016**







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**WaterMark Technical Specification**

Document formerly known as:-

ATS 5200.037.1 – 2006 Technical Specification for Plumbing and Drainage Products  
Flow controllers – For controlling flows in cold or heated water systems

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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 5200.037.1 – 2006.

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).

While the ABCB, the participating Governments and other groups or individuals who have endorsed or been involved in the development of the WMTS, have made every effort to ensure the information contained in this document is accurate and up to date, such information does in no way constitute the provision of professional advice.

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Users should seek appropriate independent professional advice prior to relying on, or entering into any commitment based on material in this document in relation to plumbing or related activities. Its interpretation in no way overrides the approvals processes in any jurisdiction.

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-037.1:2016 Technical Specification for plumbing and drainage products, Flow controllers – For controlling flows in cold or heated water 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](http://www.abcb.gov.au)). These lists will be version controlled with appropriate historic references.

## **ACKNOWLEDGEMENTS**

Australian Technical Specification ATS 5200.037.1 – 2006, 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 6 January 2006.

The following organisations were represented on Committee WS-031 in the preparation of Australian Technical Specification ATS 5200.037.1 – 2006.

- AUSTAP
- Australian Electrical and Electronic Manufacturers Association
- Australian Industry Group
- Building Officials Institute of New Zealand
- Certification Interests (Australia)
- Consumer Electronics Suppliers Association
- Copper Development Centre—Australia
- CSIRO Manufacturing and Infrastructure Technology
- Gas Appliances and Services Association
- Master Plumbers and Mechanical Services Association of Australia
- Master Plumbers Australia
- Master Plumbers, Gasfitters and Drainlayers New Zealand
- National Fire Industry Association
- New Zealand Water & 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 pressure-compensating type flow control devices that deliver a fixed and constant flow rate, throughout a given pressure differential range. It is intended for in-line flow control to deliver maximum constant flow rates in various plumbing, industrial or water utility type applications, or for system management.

*NOTE: Flow controllers used for water conservation in accordance with WELS scheme are covered by WMTS-037.2.*

## 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 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

- 1357 Valves primarily for use in heated water systems
- 1357.2 Part 2: Control valves
- 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
- 1646 Elastomeric seals for waterworks purposes
  - 1646.1 Part 1: General requirements
  - 1646.2 Part 2: Material requirements for pipe joint seals used in water and wastewater applications—Specifies by prescription formulation
  - 1646.3 Part 3: Material requirements for pipe joints seals used in water and wastewater applications with the exception of natural rubber and polyisoprene compounds
  - 1646.4 Part 4: Material requirements for pipe joint seals used in water and wastewater applications—Thermoplastic elastomers and vulcanizates



- 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—Metallic fittings and 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
- 3718 Water supply—Tap ware
- 4020 Testing of products for use in contact with drinking water

#### WSA

- 109 Flange gaskets and O-rings

#### ABCB

Procedure for Certification of Plumbing & Drainage Products

#### WMTS

WMTS-037.2 Flow controllers—For controlling flows in cold or heated water systems

## 4 DEFINITIONS

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

#### 4.1 Flow controller

A device designed to regulate the flow of water so as to maintain a constant flow rate over a given range of pressures.

#### 4.2 Nominal flow rate

Flow rate, in litres per minute, as determined by calculation, from the mean of flow rate delivered over a range of prescribed pressures.

## 5 MATERIALS

### 5.1 General

This Clause specifies requirements for materials utilized in the construction of the product.

### 5.2 Metallic materials

Metallic materials in contact with water shall be corrosion resistant. For the purposes of this Specification the following materials are considered to be corrosion resistant:

- (a) Copper, as specified in Clause 5.2.1.
- (b) Copper alloy, as specified in Clause 5.2.2 and 5.2.3.
- (c) Stainless steel, as specified in Clause 5.2.4.

#### 5.2.1 Copper

Copper shall comply with the following:

- (a) *Wrought products* AS 2738.
- (b) *Tubular components* Copper tube shall comply with AS 1432.

#### 5.2.2 Copper alloy

Copper alloy shall comply with the following:

- (a) *Castings* AS 1565 or capable of passing the requirements of Clause 5.3 provided the alloy contains not less than 58% copper and not more than 1% aluminium.
- (b) *Hot pressings* AS/NZS 1568.
- (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.

### 5.2.3 *Dezincification-resistant (DR) copper alloy*

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

### 5.2.4 *Stainless steel*

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

## 5.3 **Plastics materials**

### 5.3.1 *General*

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

#### 5.3.1.1 *UV Resistance.*

Plastics materials for outdoor applications shall be stabilized by suitable ultraviolet light stabilizers.

## 5.4 **Elastomeric materials**

Materials used for seals shall comply with AS 1646, all parts.

Materials used for gaskets shall comply with WSA 109.

# 6 **MARKING**

Each flow controller shall be permanently and legibly marked with the following:

- (a) Manufacturer's name, brand or trademark.
- (b) Direction of flow.
- (c) WaterMark.
- (d) Licence number.
- (e) The number of this Technical Specification, i.e., WMTS-037.1.

*NOTE: Where space is limited, the number of the Technical Specification may be in abbreviated form, i.e., S037.1.*

# 7 **PACKAGING**

The flow controller shall be packaged in such a manner so as to avoid damage in transit.

## **8 DESIGN**

### **8.1 End connectors**

End connectors, for connection to either copper or copper alloy metallic pipes or fittings, shall comply with AS 3688 or AS 4087. All other end connectors shall comply with the requirements relevant to the connection.

## **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 Hydrostatic strength test**

When tested in accordance with the hydraulic strength test for tap assemblies of AS/NZS 3718, the flow controller shall show no signs of distortion, splitting, cracking, breakage or other failure.

### **9.3 Watertightness**

When tested in accordance with the determination of watertightness test of AS/NZS 3718, the flow controller shall not leak.

### **9.4 Flow rate**

When tested in accordance with the flow rate test for inlet pressure control valves of AS 1357.2, at the manufacturer's stated minimum and maximum operating pressures and maximum operating temperature, the flow rate shall be within  $\pm 20\%$  of the manufacturer's stated flow rate.

## **10 VOID**

## **11 PRODUCT DOCUMENTATION**

### **11.1 Product data**

Product data that identifies the following critical product characteristics shall be available:

- (a) Delivery volume and flow rate.
- (b) Maximum allowable operating pressure and temperature.
- (c) Minimum operating pressure.
- (d) Hydrostatic pressure loss.
- (e) Maximum noise rating.

## 11.2 Installation and maintenance instructions

### 11.2.1 *Installation instructions*

Full installation instructions shall be provided for the trap priming valves, which shall include the following:

- (a) Requirements as specified in AS/NZS 3500.
- (b) Step-by-step instructions.
- (c) Details of any special tools or training that may be required to install the product.
- (d) Commissioning procedures and adjustments required.
- (e) Troubleshooting guide.
- (f) Contact details for after-sales service.

### 11.2.2 *Operating and maintenance instructions*

Operating and maintenance instructions shall be provided, which shall include the following:

- (a) Any regular maintenance requirements.
- (b) Spare parts information.
- (c) Troubleshooting guide.
- (d) 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 is to 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 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. 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 Type test batch**

Schedule of units of the same type, nominal flow rate nominal size. The batch is defined by the manufacturer.

#### **A.4.2 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.4.3 Sampling plan**

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

#### A.4.4 Type testing

Testing performed to demonstrate that the flow controller 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 shall be 100% tested and only those products 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	Composition, temper, etc.	Review materials parts lists and compliance certificates	At any change in material specification
Marking	6	Marking	Review of documentation/physical examination	At any change in design specification
Packaging	7	Protection against transportation and handling damage		
Design	8.1	End connectors	AS 3688	At any change in the design
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	Hydraulic strength test	AS/NZS 3718	At any change in design or manufacturing process
	9.3	Watertightness	AS/NZS 3718	
	9.4	Flow rate	AS 1357.2	
Product documentation	11.	Product data, installation, operating and maintenance instructions	Visual examination of the documentation	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, 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	Once per batch
Production tests	9.3	Watertightness	Clause 9.3	Once per batch
	9.4	Flow rate	AS 1357.2	Once per batch





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