



WMTS-052:2024

Metallic-bodied inlet pressure control valves equal to or greater than DN 50

WaterMark Technical Specification

2024



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This Technical Specification supersedes WaterMark Technical Specification WMTS-055:2016.

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PREFACE

WaterMark Technical Specification WMTS-052:2024 Technical Specification for plumbing and drainage products, Metallic-bodied inlet pressure control valves equal to or greater than DN 50 was prepared by industry to supersede WaterMark Technical Specification WMTS-052:2016.

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

The revisions to Technical Specification, WMTS-052 Metallic-bodied inlet pressure control valves equal or greater than DN 50, include the following amendments:

- (i) *Revised title to clarify the scope includes the size DN 50.*
- (ii) *Clause 9.1 scaling factor for a product as determined within AS/NZS 4020 to be tested as 'in-line' devices and not 'end of line' devices.*
- (iii) *Clause 5.2.3 (d) amended to align with current environmental and occupational, health and safety requirements.*
- (iv) *Clause 5.2.4 amended to allow for new and innovative stainless steel materials.*
- (v) *Addition of Tables A3 & A4*
- (vi) *General editorial changes.*

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. These lists are located on the ABCB website (www.abcb.gov.au). These lists are version controlled with appropriate historic references.

ACKNOWLEDGEMENTS

Australian Technical Specification ATS 5200.052 – 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 10 March 2005.

The following organisations were represented on Committee WS-031 in the preparation of Australian Technical Specification ATS 5200.052 – 2005.

- AUSTAP
- Australian Electrical and Electronic Manufacturers Association
- Australian Industry Group
- Certification Interests (Australia)
- Consumer Electronics Suppliers Association
- Copper Development Centre—Australia
- 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

WaterMark Technical Specification WMTS-052:2024 was prepared by industry and reviewed by the ABCB WaterMark Technical Advisory Committee. It was approved by the ABCB on 27 November 2023.

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1 SCOPE

This Technical Specification sets out requirements for the design, construction, testing and performance of metallic-bodied inlet pressure control valves. The valves are primarily intended for use in cold water supply systems at continuous working pressures not exceeding 1400 kPa.

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

- 1357 Valves primarily for use in heated water systems
- 1357.1 Part 1: Protection valves
- 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
- 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 and gas systems—Metallic fittings and end connectors

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

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 and AS 1357 apply.

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, and for the purposes of this Technical Specification the following materials are considered 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 5.2.3 provided that 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 tubes complying with AS 1572 alloy designation C 26130. Where bent or stamped in the fabrication process, the pipe shall be sufficiently stress-relieved, so that it is capable of passing the stress corrosion test specified in ISO 6957 Clause 8, using a test solution of pH 9.5 without prior pickling, after all fabrication processes are completed.

NOTE: ISO 6957 requires that the entire component is tested before any coating or plating operation.

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 (SS) utilized in the construction of the assembly and in contact with cold water shall have a PREN of 18 or greater.

NOTE 1: PREN (Pitting resistance equivalent number) is defined in AS/NZS 3500.0 and may be calculated as follows:

$$PREN = \% Cr + (3.3 \times \% Mo) + (16 \times \% N).$$

NOTE 2: A PREN of 18 is approximately equivalent to Grade 304 and a PREN of 22 is approximately equal to Grade 316

6 MARKING

Markings to be placed on products or packaging shall be in accordance with the [Manual for the WaterMark Certification Scheme](#).

In addition, each valve shall be permanently and legibly marked with the following:

- (a) Direction of flow.
- (b) Name or model number of the valve.
- (c) Flow rate in litres per minute.

7 PACKAGING

Products shall be packaged in such a manner so as to avoid damage during transportation and handling.

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. Other connection ends shall comply with the requirements relevant to the connection.

8.2 Wrenching flats

Valves shall be provided with a minimum of two wrenching flats, when threaded connections are used.

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. Products shall be tested as in-line devices and a scaling factor of 0.01 shall be applied.

9.2 Torque test applicable to threaded end connections

When tested in accordance with the torque test of AS 1357.1, the valve shall not leak. The torque requirements for 50 mm valves shall be applied to those greater than 50 mm.

9.3 Leakage test

When tested in accordance with the leakage test of AS 1357.2, the valve shall not leak.

9.4 Flow rate test

When tested in accordance with AS 1357.2, the flow rate of the valve shall be established.

9.5 Outlet pressure test

When tested in accordance with the outlet pressure test of AS 1357.2, the pressure at the outlet of the valve shall fall within the following limits:

- (a) Pressure reducing valves—the greater of set pressure $\pm 10\%$ or set pressure ± 15 kPa.
- (b) Pressure limiting valves—set pressure $+35, -10\%$.
- (c) Ratio valves—the pressure calculated by dividing the applied inlet pressure by the specified ratio $+35, -10\%$.

9.6 Endurance test

When tested in accordance with the endurance test of AS 1357.2, the valve shall comply with the outlet pressure requirements of Clause 9.5 and shall have a flow rate not less than 90% of the flow rate determined in accordance with Clause 9.4.

10 TEST SEQUENCE AND TEST SAMPLE PLAN

One valve of each type (set pressure/size) shall be used to test to Clauses 9.3, 9.4, 9.5 and 9.6 and the sequence shall be performed in that order. A separate valve/s shall be used for testing to Clauses 9.1 and 9.2.

11 PRODUCT DOCUMENTATION

11.1 Product data

Product data, which identifies critical product characteristics, such as the following, shall be available:

- (a) Delivery volume and flow rate.
- (b) Pressure/temperature or other limitations.

11.2 Installation instructions

Installation instructions shall be provided. They shall—

- (a) include 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) be consistent with AS/NZS 3500.1;
- (c) include detailed step-by-step instructions;
- (d) include the need for special tools or training;
- (e) detail commissioning procedures and adjustments required;
- (f) include a troubleshooting guide;
- (g) include spare part information; and
- (h) include contact details for after-sales services.

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 sampling and testing plan, as detailed in Section 10, 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 Inspection

Conformity evaluation by observation and judgement accompanied as appropriate by measuring, testing or gauging.

A.4.3 Production batch

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

A.4.4 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.4.5 Sampling plan

A specific plan that indicates the number of units of components or assemblies to be inspected.

A.4.6 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.4.7 Type testing (TT)

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

A.5.4 Minimum annual inspection requirements

Table A3 sets out the minimum annual inspection requirements to be undertaken by the WaterMark Conformity Assessment Body.

A.5.5 Re-evaluation testing

Table A4 sets out the requirements for re-evaluation testing.

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 materials specification
Design	8.1	End connectors	AS 3688 or applicable Standard	At any change in the design
	8.2	Wrenching flats	Clause 8.2	
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	Torque test (applicable to threaded end connections)	AS 1357.1	At any change in design or manufacturing process
	9.3	Leakage test	AS 1357.2	
	9.4	Flow rate test	AS 1357.2	
	9.5	Outlet Pressure test	AS 1357.2	
	9.6	Endurance test	AS 1357.2	
Product documentation	11	Product data and installation instructions	Documentation review	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, temper, etc.	Review materials parts lists and compliance certificates	Once per delivery batch
Design	8.1	End connectors	AS 3688	Once per batch
Performance	9.3	Leakage test	AS 1357.2	Once per batch
		Outlet pressure test	AS 1357.2	

Table A3—MINIMUM ANNUAL INSPECTION REQUIREMENTS

Characteristic	Clause	Requirement	Verification method
Design	8.1	End connectors	AS 3688
Product documentation	11	Product data and installation instructions	Documentation review

Table A4 —RE-EVALUATION TESTING

Characteristic	Clause	Requirement	Test method
Materials	5	Composition, temper, etc.	Review materials parts lists and compliance certificates
Design	8.1	End connectors	AS 3688 or applicable Standard
Performance	9.3	Leakage test	AS 1357.2
	9.5	Outlet Pressure test	AS 1357.2
Product documentation	11	Product data and installation instructions	Documentation review

