WATERMARK

WMTS-535:2022

Anti-slam air valves for plumbing applications

WaterMark Technical Specification

2022

Australian Building Codes Board

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PREFACE

This WaterMark Technical Specification (WMTS) was prepared in accordance with the Manual for the WaterMark Certification Scheme, Appendix 4, Protocol for Developing Product Specifications.

The objective of this WaterMark 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 WaterMark 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 WaterMark Technical Specification to define the application of the appendices to which they apply. A 'normative' appendix is an integral part of a WaterMark Technical Specification.

The test protocol and information in this WaterMark Technical Specification was arranged to meet the authorisation requirements given in the PCA.

The WaterMark Schedule of Products and the WaterMark Schedule of Excluded Products are dynamic lists and change on a regular basis. Based on this function, these schedules are now located on the ABCB website (www.abcb.gov.au). These lists will be version controlled with appropriate historic references.

This WMTS should be read in conjunctions with AS 4956. Anti-slam air valves are suitable types of valves for plumbing applications. Anti-slam valves have a mechanism to minimise water hammer conditions during pipe filling or column separation.

ACKNOWLEDGEMENTS

WaterMark Technical Specification WMTS-535:2022 was prepared by industry and was approved by the Administering Body on 07 March 2022.

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1 SCOPE

This specification contains the requirements for anti-slam air valves for plumbing applications to enable WaterMark certification. Anti-slam air valves covered by this specification range from DN 15 to DN 250, with a maximum operating temperature of 70°C.

NOTE: AS 4956 should be read in conjunction with this specification.

2 APPLICATION

The intended application of air valves is within hot, cold and heated recirculatory building plumbing pipe systems. The primary function of the valve is to keep entrapped air out of the building pipework network, to maximise flows and minimise water hammer within the pipework.

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

3 REFERENCED DOCUMENTS

AS

1565	Copper and copper alloys – Ingots and castings
2345	Dezincification resistance of copper alloys
4956	Air Valves for water supply

AS/NZS

1567	Copper and Copper alloys – Wrought rods, bars and sections
1568	Copper and copper alloys – Forging stock and forgings
4020	Testing of products for use in contact with drinking water
3500.0	Plumbing and drainage, Part 0: Glossary of terms.

CEN/TS

13388	Copper and copper alloys – Compendium of compositions and products

NCC

PCA	Volume Three – Plumbing Code of Australia

4 DEFINITIONS

For the purpose of this specification, the definitions given in the WaterMark Scheme Rules, Plumbing Code of Australia, AS/NZS 3500.0 and those below apply.

4.1 Anti-slam air valve

A valve fitted with anti-slam devices, which allows air to be released through an orifice at a controlled rate, to reduce the impact of pressure surges that may occur during filling of the pipework or when the water column has been separated and is re-joining.

5 MATERIALS

5.1 General

The materials used in the construction of air valves shall comply with AS 4956.

NOTE: Consideration shall be given to the maximum service temperature of 70 degrees when selecting elastomers for valve components.

5.2 Materials in contact with drinking water

Materials in contact with drinking water shall comply with AS/NZS 4020. Products shall be tested using a maximum scaling factor of 0.05.

5.3 Copper Alloys

Copper alloys shall comply with AS 4956, or CEN/TS 13388 and be compliant to AS 2345.

6 MARKING

Markings to be placed on products or packaging shall, as a minimum, be in accordance with clause 9.6 of the Manual for the WaterMark Certification Scheme.

The marking of air valves shall comply with AS 4956 with the exception of clause 6.1.1(f), where AS 4956 shall be replaced with WMTS-535.

In addition to the marking requirements of AS 4956, the product shall be marked with its maximum operating temperature and an indicator to illustrate the product installation in a vertical orientation.

7 PACKAGING

The packaging of air valves shall comply with AS 4956.

8 DESIGN

8.1 General

The design of air valves in scope shall comply with the design requirements of AS 4956. Air valves shall be anti-slam type only.

8.2 Protective coatings

Coatings applied to air valves shall comply with AS 4956 – Protective Coatings.

8.3 Strainers

Air valves shall incorporate design features that prevent the fouling of the valve due to debris in the water supply. Mesh strainers that are accessible, for the purposes of cleaning, are considered suitable means to prevent debris entering the valve.

8.4 Provision for drainage

Air valves shall incorporate means to connect the discharge to the building drainage system. End Connections for the connection to the drainage system shall comply with AS 4956.

9 PERFORMANCE CRITERIA AND TEST METHODS

9.1 General

Air valves shall comply with the performance requirements of AS 4956.

10 TEST SEQUENCE AND TEST SAMPLE PLAN

Type testing shall be completed in accordance with the sampling requirements of AS 4956.

11 PRODUCT DOCUMENTATION

The following documents shall be supplied with the product:

a) Installation, operating and maintenance instructions.

b) The installation instructions shall reference installation in accordance with the NCC Volume Three – Plumbing Code of Australia, and any limitations on the product.

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.

c) A statement that the product shall only be installed in a vertical orientation.

d) A statement that the product shall be installed in a location that is not subject to submersion.

e) A statement that the product shall be installed in an accessible location.

f) A statement that the product shall be installed directly downstream of a suitable isolating valve.

g) Information and diagrams of the air valve outlet discharging over a tundish connected to the drainage system. This information is to ensure the installer is aware of the requirements for the prevention of water contamination due to cross-connection with drainage pipework.

Note: The use of a tundish in conjunction with drainage pipework should be clearly detailed in the product installation instructions.

h) The expected flow from the valve discharge is to be provided to allow the design of drainage pipework.

i) The need for appropriate pipe supports associated with the valve.

j) The expectations of the installer during pressure testing of pipework i.e. to remove the valve or any other precautions.

k) Product data.

All documentation shall be written in clear, concise, plain English supported by relevant figures and diagrams. Documentation may be provided in either hard copy or electronic form, e.g. installation DVDs or hyperlinks to information that may be downloaded from a website.

APPENDIX A MEANS FOR DEMONSTRATING COMPLIANCE WITH THIS SPECIFICATION

(Normative)

A.1 SCOPE

This appendix sets out the means by which compliance with this specification shall 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 specification.

The WaterMark Certification Scheme serves to indicate that the products consistently conform to the requirements of this 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.

Annual product conformity surveillance shall be undertaken by the WaterMark Conformity Assessment Body in accordance with Paragraph A5 and Table A3. Re-evaluation testing for re-certification, as detailed in Paragraph A.5 and Table A4, shall be used by the WaterMark Conformity Assessment Body.

A.4 DEFINITIONS

A.4.1 Batch release test

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

A.4.2 Product inspection

Examination of certified product, conducted during annual product conformity surveillance, to determine its conformity with the specific requirements of its current certification and WaterMark Licence.

A.4.3 Production batch

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

A.4.4 Re-evaluation testing

Testing carried out in conjunction with renewal of the certification.

A.4.5 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.4.6 Sampling plan

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

A.4.7 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.4.8 Type testing (TT)

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

A.5 TESTING AND INSPECTION

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 specification on an ongoing basis. However, where the manufacturer can demonstrate adequate process control to the certifying 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 specification.

A.5.4 Minimum annual inspection requirements

Table A3 sets out the minimum annual inspection requirements to be undertaken.

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	5.1	General – AS 4956	Review materials parts lists and compliance certificates	At any change in materials specification
	5.2	Materials in contact with drinking water	AS/NZS 4020	At any change in materials, formulation or design, or every five years, whichever occurs first
	5.3	Copper alloys	Review materials parts lists and compliance certificates	At any change in materials specification
Design	8.1	General	AS 4956	At any change in the design
	8.2	Protective coatings	AS 4956	
	8.3	Strainers	Review materials parts lists and compliance certificates	
	8.4	Provision for drainage	Design drawings and AS 4956 End connection	
Performance	9.1	Anti-slam valves	AS 4956	At any change in design or manufacturing process
Product documentation	11	Product data/Installation and maintenance instructions	Product documentation	At any change to installation requirements

TABLE A2
BATCH RELEASE TESTS

Characteristic	Clause	Requirement	Test method	Frequency
Materials	5.1	Composition, temper, etc.	Review materials parts lists and compliance certificates	Once per batch
Marking	6	Marking	Visual examination	100%
Design	8.1	AS4956 – Table A3.3(B)	AS4956 – Table A3.3(B)	Once per batch
Performance	9.1	AS4956 – Table A3.3(B)	AS4956 – Table A3.3(B)	Each valve

TABLE A3
MINIMUM ANNUAL INSPECTION REQUIREMENTS

Characteristic	Clause	Requirement	Verification method	Frequency
Design, assembly and component	8.1	General operation	Visual and component examination	Sample from product family, covering all families within 5 year certification cycle
	8.1	Inlet and outlet connections	Visual and component examination	
	8.2	Strainers	Visual and component examination	
Dimensional inspection	9.1	Anti-slam valves	Production test records	
Product marking	6	Product marking, use of the WaterMark logo and licence number	Visual inspection of marked product, relevant packaging and documentation	
Product documentation	11	Product data/Installation and maintenance instructions	Product documentation	

TABLE A4
RE-EVALUATION TESTING

Characteristic	Clause	Requirement	Test method
Materials	5.1	Materials	Review materials parts lists and compliance certificates
	5.2	Materials in contact with water	AS/NZS 4020
Design	8.2	End connections	AS 4956
Performance	9.1	AS4956 – Table A3.3(B)	AS4956 – Table A3.3(B)
Product documentation	11	Product data/Installation and maintenance instructions	Product documentation

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