

Australian Standard[®]

**Water supply—Float control valves for
use in hot and cold water**



This Australian Standard® was prepared by Committee WS-001, Water Fittings. It was approved on behalf of the Council of Standards Australia on 15 April 2004. This Standard was published on 7 July 2004.

The following are represented on Committee WS-001:

- Australasian Institute of Mining and Metallurgy
 - Australian Coal Association
 - Australian Coal Preparation Society
 - Australian Institute of Energy
 - Coalfield Geology Council of New South Wales
 - CSIRO, Energy Technology
 - Department of Natural Resources and Mines, Qld
 - Minerals Council of Australia
 - National Association of Testing Authorities, Australia
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-

This Standard was issued in draft form for comment as DR 03484.

Standards Australia wishes to acknowledge the participation of the expert individuals that contributed to the development of this Standard through their representation on the Committee and through public comment period.

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Australian Standard[®]

Water supply—Float control valves for use in hot and cold water

Originated as AS 1910—1976.
Previous edition AS 1910—1994.
Third edition 2004.
Reissued incorporating Amendment No. 1 (July 2006).

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Published by Standards Australia, GPO Box 476, Sydney, NSW 2001, Australia

ISBN 0 7337 6073 2

PREFACE

This Standard was prepared by the Standards Australia Committee WS-001, Water Fittings, to supersede AS 1910—1994.

This Standard incorporates Amendment No. 1 (July 2006). The changes required by the Amendment are indicated in the text by a marginal bar and amendment number against the clause, note, table, figure or part thereof affected.

Changes to this edition are as follows:

- (a) Inclusion of metal and plastic materials.
- (b) Testing based on performance.

Acoustic requirements have not been addressed until further research on testing procedures and methods is available.

The term ‘normative’ has been used in this Standard to define the application of the appendix to which it applies. A ‘normative’ appendix is an integral part of a Standard.

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STANDARDS AUSTRALIA

Australian Standard**Water supply—Float control valves for use in hot and cold water**

SECTION 1 SCOPE AND GENERAL

1.1 SCOPE

This Standard specifies requirements for active float control valves for use in water supply systems where the normal working temperature does not exceed 95°C and the continuous working pressure extends up to a maximum of 1.4 MPa for a range of nominal sizes from DN 6 to DN 80.

This Standard does not cover WC cistern flushing valves.

NOTE: WC cistern flushing valves are covered in all parts of AS 1172.

Means of demonstrating compliance with this Standard are set out in Appendix A.

1.2 REFERENCED DOCUMENTS

Documents referred to in this Standard are listed in Appendix B.

1.3 DEFINITIONS

For the purpose of this Standard the definitions given in AS/NZS 3500.0 apply.

1.4 DESIGNATION OF NOMINAL SIZE

The nominal size shall be related to the inlet connection of the valve.

1.5 PERMANENT DISTORTION

Permanent distortion for the purpose of the tests in this Standard, is limited to permanent distortion which is obvious to the eye without resorting to dimensional checks.

SECTION 2 MATERIALS

2.1 SCOPE OF SECTION

This Section specifies requirements for the materials of float control valves.

2.2 COPPER

Copper shall comply with the following:

- (a) *Wrought products* AS 2738.
- (b) *Tubular components* AS 1432.

2.3 COPPER ALLOY

Copper alloy shall comply with the following:

- (a) *Castings* AS 1565 or an alloy complying with AS 2345 provided that the alloy contains not less than 58% copper and not more than 1% aluminium.
- (b) *Hot pressings* AS 1568 or an alloy complying with AS 2345.
- (c) *Rod for machined parts* AS 1567 or an alloy complying with AS 2345.
- (d) *Tubular components* AS 1572 alloy designation 259. 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 completed. For the purpose of this test, the entire tube component shall be tested before any coating or plating operation.

2.4 DEZINCIFICATION-RESISTANT (DR) COPPER ALLOY

Copper alloys shall be DR complying with AS 2345.

2.5 STAINLESS STEEL

Stainless steel shall comply with the following:

- (a) *Wrought components* ASTM A276 Grade 304 or Grade 316.
- (b) *Tubular components* ASTM A269.
- (c) *Cast components* AS 2074 Grade H5A or Grade H6B.

2.6 PLASTICS MATERIALS

2.6.1 General

Plastic materials used in valve components shall be of a type recommended by the polymer manufacturer as suitable and appropriate for use in the manufacture of the valve component or otherwise demonstrate suitability. Characteristics to be taken into account shall include compatibility and resistance to variations in water quality and elevated temperatures.

2.6.2 Acetal

Acetal plastics used for structural components that are in contact with the water supply shall be copolymer.

2.6.3 UV resistance

Plastics components that are designed to be exposed to direct sunlight when installed shall not crack, craze or exhibit signs of any defect when tested in accordance with AS 3558.5. Following exposure to the UV conditions specified in AS 3558.5, plastic-bodied valves shall pass the hydraulic strength test specified in Clause 4.4.

2.6.4 Resistance to chemical degradation

NOTE: Selection of elastomeric and plastics materials should take into account the chemical composition of the water, its additives and chemicals used in disinfection.

2.7 OTHER COMPONENT MATERIALS

The following applies:

- (a) *Ceramics* Ceramic materials may be used.
- (b) *Filler metals* Filler metal shall be one of the following:
 - (i) Silver brazing alloy containing not more than 0.05% cadmium, complying with AS 1167.1.
 - (ii) Copper-phosphorous brazing alloys complying with AS 1167.1 with a minimum of 1.8% silver.
 - (iii) Solder complying with the requirements of AS 1834.1 and having a maximum of 0.1% lead.
- (c) *Materials for springs* Materials for springs shall comply with one of the following:
 - (i) Stainless steel to ASTM A343, Grade 302 or Grade 304, or Grade 316.
 - (ii) Stainless steel to ASTM A313.
 - (iii) Phosphor bronze to AS 2738, Alloy 518.

NOTE: Other grades may be used providing they meet the performance criteria of this Standard.
- (d) *Nickel-copper-iron* Nickel-copper-iron shall comply with one of the following:
 - (i) AS 2738, Alloy 713.
 - (ii) ASTM B127, ASTM B163, ASTM B164 and ASTM B165.
- (e) *Zinc alloy die-castings* Zinc alloy die-castings shall only be used for non-pressure applications and shall comply with AS 1881.
- (f) *Washers and sealing rings* Washers and sealing rings shall comply with the requirements of Clause 2.8 and the following:
 - (i) *Gland packing* Material for gland packing shall be asbestos free and suitable for hot or cold water.
 - (ii) *O-ring* Material for O-rings shall comply with the relevant Standard.
- (g) *Lubricants* Lubricants shall comply with the requirements of Clause 2.8.

2.8 CONTAMINATION OF WATER

Valves and their components in contact with drinking water for use in hot and cold water applications shall be manufactured from materials complying with AS/NZS 4020.

SECTION 3 DESIGN

3.1 SCOPE OF SECTION

This Section specifies requirements for design and manufacture of valves. The design shall permit the valve to be serviceable in the field.

3.2 END CONNECTORS

3.2.1 General

The nominal size of end connectors shall be not less than the nominal size of the valve.

3.2.2 Threaded end connections

Threaded-end connections for connection to pipe fittings shall conform to the requirements and dimensions specified in AS 3688.

3.2.3 Compression ends

Ends for connection to copper tubes by a compression joint shall conform to the requirements and dimensions specified in AS 3688.

3.3 SCREW THREADS

3.3.1 General

All threads shall be right-hand, unless the design of the operating mechanism requires the use of left-hand threads to achieve the desired operation. After the completion of manufacture, including any plating operations, threads shall be of the sizes specified and shall comply with the requirements of Clauses 3.3.2 and 3.3.3. All threads shall be chamfered at the end face.

3.3.2 Pipe threads

The following applies:

- (a) *Fastening pipe threads* Fastening pipe threads shall comply with AS 1722.2.
 - (i) *Metallic* Internal threads shall be Series G. External threads shall be either Series GA or Series GB unless otherwise specified in this Standard.
 - (ii) *Non-metallic* Fastening pipe threads shall be suitable for use with mating threads complying with AS 1722.2, unless otherwise specified in this Standard.
- (b) *Sealing tapered pipe threads* Tapered pipe threads shall comply with the relevant requirements of AS 1722.1. External threads shall be Series R. Internal threads shall be Series RP.

3.3.3 Other screw threads

Other screw threads shall comply with a recognized Standard.

3.3.4 Thread engagement

Threaded joints, when assembled with washers, if any, shall have a minimum number of three full threads engagement.

3.4 FABRICATED COMPONENTS

Fabricated components shall comply with the requirements of this Standard.