

ANSI/AWWA **C514-20**  
(Revision of ANSI/AWWA C514-15)

AWWA Standard

# Air Valve and Vent Inflow Preventer Assemblies for Potable Water Distribution System and Storage Facilities

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American Water Works  
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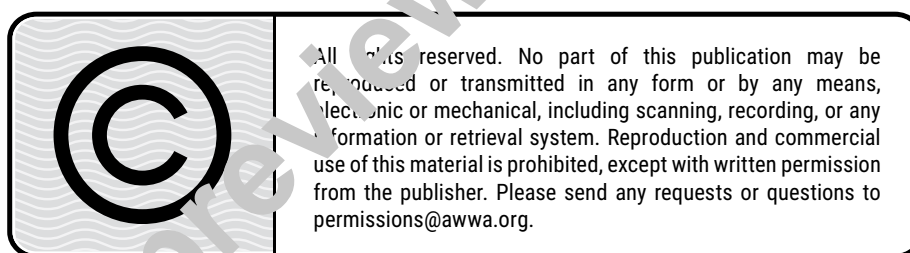
## AWWA Standard

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# Contents

*All AWWA standards follow the general format indicated subsequently. Some variations from this format may be found in a particular standard.*

SEC.	PAGE	SEC.	PAGE
<b>Foreword</b>		<b>4</b>	<b>Requirements</b>
I	vii	4.1	Data to Be Provided by Manufacturer or Supplier ..... 5
I.A	vii	4.2	Materials ..... 5
I.B	vii	4.3	General Design and Detailed Design Requirements ..... 7
I.C	viii	4.4	Welding and Fabrication ..... 10
II	ix	4.5	Workmanship and Painting ..... 11
II.A	ix	<b>5</b>	<b>Verification</b>
II.B	ix	5.1	Testing ..... 11
II.C	ix	5.2	Inspection ..... 12
II.D	ix	5.3	Rejection ..... 13
III	ix	<b>6</b>	<b>Delivery</b>
III.A	ix	6.1	Marking ..... 13
III.B	x	6.2	Preparation for Shipment ..... 13
IV	x	6.3	Affidavit of Compliance ..... 13
V	x	<b>Appendix</b>	
<b>Standard</b>		A	Installation, Operation, and Maintenance of Inflow Preventer Assemblies ..... 15
<b>1</b>	<b>General</b>	A.1	General ..... 15
1.1	Scope ..... 1	A.2	Unloading ..... 15
1.2	Purpose ..... 1	A.3	Storage ..... 15
1.3	Application ..... 1	A.4	Inspection Prior to Installation ..... 16
<b>2</b>	<b>References</b> ..... 2		
<b>3</b>	<b>Definitions</b> ..... 4		

SEC.	PAGE	SEC.	PAGE
A.5	Installation .....	16	
A.6	Field Testing.....	17	
A.7	Owner's Records.....	17	
A.8	Operation.....	17	
A.9	Maintenance .....	18	
		<b>Figure</b>	
		1	Inflow Preventer With Redundant Chambers..... 8
		<b>Tables</b>	
		1	Required Flow Capacities ..... 7
		2	Inflow Preventer Flow-Test Size Categories ..... 12

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# Foreword

*This foreword is for information only and is not a part of ANSI\*/AWWA C514.*

## **I. Introduction.**

I.A. *Background.* This standard describes air valve and vent inflow preventer assemblies, which are cross-connection control assemblies piped to the outlet of air valves and vents to prevent the entry of contaminated water into the potable water distribution system or storage facilities during flooded conditions. Under normal conditions, the inflow preventer allows airflow in and out of air valves and vents, but when the assembly is submerged, redundant float-operated closure mechanisms automatically close to prevent the entry of contaminated water into the potable water distribution system or storage facilities.

The production and preservation of safe, potable water are the objectives of greatest priority for public water utilities and other agencies having jurisdiction over potable water systems. When potable water has been produced and put into the water distribution system or storage facilities, precautions must be taken to be certain the potable water is not contaminated. While cross-connection control programs usually require that backflow prevention assemblies be installed at the water service connections to premises where potentially contaminated water conditions exist, inflow preventer assemblies may be needed within the potable water distribution system or at the storage facilities to protect the potable water distribution system and storage facilities from contamination. Recommendations for specifying the type and use of cross-connection control assemblies may be found in AWWA Manual M14, *Backflow Prevention and Cross-Connection Control: Recommended Practices*.

I.B. *History.* The AWWA Standards Committee on Air Valves was authorized to create a new standard in September 2012, in response to a request for a standard on inflow preventer assemblies for potable water distribution systems and storage facilities. In 2014, the AWWA Standards Committee on Air Valves began work on a new standard for the assembly to be congruent with American Society of Sanitary Engineering Standard ASSE 1063-08, which is used in the plumbing industry. The first edition of this standard, AWWA/ANSI C514, was approved by the AWWA Board of Directors on June 7, 2015. This edition was approved by the AWWA Board of Directors on Oct. 26, 2020.

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\* American National Standards Institute, 25 West 43rd Street, Fourth Floor, New York, NY 10036.

I.C. *Acceptance.* In May 1985, the US Environmental Protection Agency (USEPA) entered into a cooperative agreement with a consortium led by NSF<sup>†</sup> International (NSF) to develop voluntary third-party consensus standards and a certification program for direct and indirect drinking water additives. Other members of the original consortium included the Water Research Foundation (formerly AwwaRF) and the Conference of State Health and Environmental Managers (COSHEM). The American Water Works Association (AWWA) and the Association of State Drinking Water Administrators (ASDWA) joined later.

In the United States, authority to regulate products for use in, or in contact with, drinking water rests with individual states.<sup>‡</sup> Local agencies may choose to impose requirements more stringent than those required by the state. To evaluate the health effects of products and drinking water additives from such products, state and local agencies may use various references, including

1. Specific policies of the state or local agency.
2. Two standards developed under the direction of NSF: NSF/ANSI/CAN<sup>§</sup> 60, Drinking Water Treatment Chemicals—Health Effects, and NSF/ANSI/CAN 61, Drinking Water System Components—Health Effects.
3. Other references, including AWWA standards, *Food Chemicals Codex*, *Water Chemicals Codex*,<sup>¶</sup> and other standards considered appropriate by the state or local agency.

Various certification organizations may be involved in certifying products in accordance with NSF/ANSI/CAN 61. Individual states or local agencies have authority to accept or accredit certification organizations within their jurisdictions. Accreditation of certification organizations may vary from jurisdiction to jurisdiction.

Annex A, “Toxicology Review and Evaluation Procedures,” to NSF/ANSI/CAN 61 does not stipulate a maximum allowable level (MAL) of a contaminant for substances not regulated by the USEPA final maximum contaminant level (MCL). The MALs of an unspecified list of “unregulated contaminants” are based on toxicity testing guidelines (noncarcinogens) and risk characterization methodology (carcinogens). Use of Annex A procedures may not always be identical, depending on the certifier.

<sup>†</sup> NSF International, P.O. Box 130140, 789 North Dixboro Road, Ann Arbor, MI 48105.

<sup>‡</sup> Persons outside the United States should contact the appropriate authority having jurisdiction.

<sup>§</sup> Standards Council of Canada, 55 Metcalfe Street, Suite 600, Ottawa, ON K1P 6L5 Canada.

<sup>¶</sup> Both publications available from The National Academies Press, 500 Fifth Street NW, Keck 360, Washington, DC 20001.

AWWA/ANSI C514 does not address product certifications. Thus, users of this standard should consult the appropriate state or local agency having jurisdiction in order to

1. Determine the status and accreditation of certification organizations offering to certify products of this type in the applicable jurisdiction.
2. Determine current information on product certifications to this or related standards.

## **II. Special Issues.**

II.A. *Advisory Information on Product Application.* For additional guidance regarding the use of the inflow preventer, see AWWA Manual M51, *Air-Release, Air/Vacuum, & Combination.*

II.B. *Field Testing.* Because of the importance of cross-connection issues, regular field testing by a certified professional is recommended in the appendix of this standard.

II.C. *Vacuum Protection.* Air valves are sometimes required to relieve a vacuum in a liquid piping system to protect the appurtenant equipment. During flooded conditions, the inflow preventer assembly will be closed and will not provide vacuum protection. Similarly, a submerged air valve without an inflow preventer will also not provide vacuum protection. If vacuum protection is required to protect the associated pipe from collapse, a pipe riser with screened outlet that extends above the maximum expected flood level should be considered.

II.D. *Sizing.* The published flow capacity of air valves or vents will be diminished when an inflow preventer assembly is installed on its discharge. As in any piping system where multiple components are piped together, the resultant flow capacity must be calculated with consideration for all assemblies and piping in the system.

**III. Use of This Standard.** It is the responsibility of the user of an AWWA standard to determine that the products described in that standard are suitable for use in the particular application being considered.

III.A. *Purchaser Options and Alternatives.* This standard includes certain options and alternatives, summarized in the following list, that the purchaser should designate when purchasing inflow preventer assemblies described in this standard. The purchaser should review each item and make appropriate provisions in required documents to stipulate additional requirements. The following information should be provided by the purchaser:

1. Standard used—that is, AWWA/ANSI C514, Air Valve and Vent Inflow Preventer Assemblies for Potable Water Distribution System and Storage Facilities, of latest revision.

2. Nominal size.
3. Quantity required.
4. Warranty statement, if other than manufacturer's standard warranty.
5. Catalog data, if specified (Sec. 4.1.1).
6. Certified drawings, if specified (Sec. 4.1.2).
7. Operation and maintenance manual, if specified (Sec. 4.1.3).
8. Details of federal, state, and local requirements (Sec. 4.2.1).
9. Records of all material tests (Sec. 4.2.2).
10. Whether stainless-steel bolts shall be provided (Sec. 4.2.2.5).
11. Physical strength of body bolting (Sec. 4.2.2.5 and Sec. 4.3.2.4).
12. Body configuration, threaded or flanged (Sec. 4.3.2.1.1).
13. Body material of construction (Sec. 4.3.2.1.1).
14. Whether field test equipment shall be provided (Sec. 4.3.2.2 3.2).
15. Whether a wall support shall be provided (Sec. 4.3.2.6).
16. Trim material (Sec. 4.3.2.7).
17. Records of tests, if specified (Sec. 5.1).
18. Closure mechanism sealing test pressure, if specified (Sec. 5.1.2).
19. Plant inspection by purchaser (Sec. 5.2).
20. Affidavit of compliance or certificate of approval, if specified (Sec. 6.3).

III.B. *Modification to Standard.* Any modification to the provisions, definitions, or terminology in this standard must be provided by the purchaser.

**IV. Major Revisions.** Major revisions made to the standard in this edition include the following:

1. The definition of design pressure was added, to align with AWWA/ANSI C512 (Section 3).
2. Added PVC pipe as an option for an air supply line during flow and pressure verification testing (Sec. 5.1.3.1.1).

**V. Comments.** If you have any comments or questions about this standard, please call the AWWA Engineering and Technical Services at 303.794.7711, FAX at 303.795.7603; write to the department at 6666 West Quincy Avenue, Denver, CO 80235-3098; or email at standards@awwa.org.



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# Air Valve and Vent Inflow Preventer Assemblies for Potable Water Distribution System and Storage Facilities

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## SECTION 1: GENERAL

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### **Sec. 1.1 Scope**

This standard describes 1-in. (25-mm) through 12-in. (300-mm) air valve and vent inflow preventer assemblies designed for use on the outlet of potable water distribution system air valves furnished in accordance with ANSI/AWWA C512 or storage facility vent pipes. The assemblies shall have a minimum design pressure of 25 psig (172.4 kPa [gauge]) and prevent the entry of contaminated water between 0 and 57.7 ft (17.6 m) of submergence at liquid temperatures ranging from 32°F (0°C) to a maximum of 125°F (52°C).

### **Sec. 1.2 Purpose**

The purpose of this standard is to provide the minimum requirements for inflow preventer assemblies including material, design, inspection, testing, marking, handling, and packaging for shipment.

### **Sec. 1.3 Application**

This standard can be referenced in documents for inflow preventer assemblies. The stipulations of this standard apply when this document has been referenced