



**American Water Works
Association**

The Authoritative Resource on Safe Water®

ANSI/AWWA C512-07
(Revision of ANSI/AWWA C512-04)

AWWA Standard

Air-Release, Air/Vacuum, and Combination Air Valves for Waterworks Service



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Foreword

This foreword is for information only and is not a part of AWWA C512.

I. Introduction

I.A. *Background.* This standard describes three types of air valves: air-release valves, air/vacuum valves, and combination air valves.

1. Air-release valves, also called small-orifice valves, are designed to automatically release small pockets of accumulated air from a pipeline while the system operates under pressure exceeding atmospheric pressure.

2. Air/vacuum valves, also called large-orifice valves, are designed to exhaust large quantities of air automatically during pipeline filling and to admit large quantities of air automatically when the internal pressure in the pipeline drops below atmospheric pressure.

3. Combination air valves are designed to perform the same function as air/vacuum valves but, in addition, they will automatically release small pockets of air from the pipeline while under pressure, like an air-release valve.

I.B. *History.* The AWWA Standards Committee on Waterworks Air-Release Valves was authorized on Nov. 17, 1984, to respond to a request for a standard on air valves. The first edition of this standard, AWWA/ANSI C512, was approved by the AWWA Board of Directors on Jan. 26, 1992, the second edition on June 20, 1999, and the third edition on June 13, 2004. This edition was approved on June 24, 2007.

I.C. *Acceptance.* In May 1985, the US Environmental Protection Agency (USEPA) entered into a cooperative agreement with a consortium led by NSF 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 American Water Works Association Research Foundation (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.* 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

* Persons outside the United States should contact the appropriate authority having jurisdiction.

agencies may use various references, including

1. An advisory program formerly administered by USEPA, Office of Drinking Water, discontinued on Apr. 7, 1990.
2. Specific policies of the state or local agency.
3. Two standards developed under the direction of NSF, NSF*/ANSI[†] 60, Drinking Water Treatment Chemicals—Health Effects, and NSF/ANSI 61, Drinking Water System Components—Health Effects.
4. Other references, including AWWA standards, *Food Chemicals Codex*, *Water Chemicals Codex*,[‡] 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 61. Individual states or local agencies have authority to accept or accredit certification organizations within their jurisdiction. Accreditation of certification organizations may vary from jurisdiction to jurisdiction.

Annex A, “Toxicology Review and Evaluation Procedures,” to NSF/ANSI 61 does not stipulate a maximum allowable level (MAL) of a contaminant for substances not regulated by a 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.

AWWA/ANSI C512 does not address additives requirements. Users of this standard should consult the appropriate state or local agency having jurisdiction in order to

1. Determine additives requirements, including applicable standards.
2. Determine the status of certifications by parties offering to certify products for contact with, or treatment of, drinking water.
3. Determine current information on product certification.

II. Special Issues.

II.A. *Advisory Information on Product Application.* For additional guidance regarding selecting, sizing, locating, and installing air-release, air/vacuum, and combination air valves, see AWWA Manual M51, *Air-Release, Air/Vacuum, & Combination Air Valves*.

II.B. *Venting.* When selecting types of valves, it must be noted that air/vacuum

* NSF International, 789 N. Dixboro Road, Ann Arbor, MI 48105.

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

‡ Both publications available from National Academy of Sciences, 500 Fifth Street NW, Washington, DC 20001.

valves, once closed, will not reopen to vent air while a pipeline is full and under pressure. To vent air from a pipeline under pressure, an air-release valve or combination air valve is required.

II.C. *Throttling and Slow-Closing Devices.* When air/vacuum or combination valves are used where pressure surges can occur, such as on the discharge of vertical turbine deep-well pumps, a throttling device or slow-closing device option should be considered.

II.D. *Pipeline Water Column Separation Protection.* On pipeline applications where water column separations may occur, a vacuum breaker with air-release valve or an air valve with restricted outflow should be considered.

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 valves described in this standard. The purchaser should review each item and make appropriate provisions in specifications to stipulate additional requirements. The following items should be provided by the purchaser:

1. Standard used—that is, AWWA/ANSI C512, Air-Release, Air/Vacuum, and Combination Air Valves for Waterworks Service, of latest revision.
2. Valve size.
3. Maximum working pressure of each valve.
4. Quantity required.
5. Type of installation (underground, in-plant, in-vault, or outdoor).
6. Warranty statement, if other than manufacturer's standard warranty.
7. Whether compliance with NSF/ANSI 61, Drinking Water System Components—Health Effects, is required.
8. Valve type, air-release valve, air/vacuum, or combination air valve (Section 3).
9. Catalog data, if specified (Sec. 4.1.1).
10. Certified drawings, if specified (Sec. 4.1.2).
11. Operating manual, if specified (Sec. 4.1.3).
12. Details of other federal, state or provincial, and local requirements (Sec. 4.2.1).
13. Body inlet configuration, threaded or flanged (Sec. 4.3.2.1).
14. Valve material of construction (Sec. 4.3.2.1.1 and 4.3.2.9).
15. Flanges, if other than flat-faced (Sec. 4.3.2.2.1).

16. Cover outlet configuration, threaded, flanged, or hooded (Sec. 4.3.2.10).
17. Whether an adjustable throttling device is required on the valve outlet and whether the device must provide full-size flow area in the reverse direction (Sec. 4.3.3).
18. Whether a slow-closing device is required on the valve inlet (Sec. 4.3.4).
19. Internal protective coating, if specified (Sec. 4.4.2.2).
20. Special external protective coatings, if other than the manufacturer's standard primer (Sec. 4.4.2.3).
21. Records of tests, if specified (Section 5).
22. Lower test pressure, if specified (Sec. 5.1.2.1, 5.1.2.2, and 5.1.3.1).
23. Affidavit of compliance, if specified (Sec. 6.3).

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

IV. Major Revisions. Major changes made to the standard in this revision include the following:

1. Added requirements for throttling devices in Sec. 4.3.3
2. Added requirements for slow-closing devices in Sec. 4.3.4.

V. Comments. If you have any comments or questions about this standard, please call the AWWA Volunteer and Technical Support Group at 303.794.7711, FAX at 303.795.7603, write to the group at 6666 West Quincy Avenue, Denver, CO 80235-3098, or e-mail at standards@awwa.org.



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AWWA Standard

Air-Release, Air/Vacuum, and Combination Air Valves for Waterworks Service

SECTION 1: GENERAL

Sec. 1.1 Scope

This standard describes ½-in. (13-mm) through 6-in. (150-mm) air-release valves and ½-in. (13-mm) through 20-in. (500-mm) air/vacuum and combination air valves having gray cast-iron or ductile-iron bodies and covers. The valves are designed for use in water systems with maximum working pressures of 300 psig (2,070 kPa [gauge]) and water temperatures ranging from above freezing to a maximum of 125°F (52°C).

Sec. 1.2 Purpose

The purpose of this standard is to provide the minimum requirements for air-release valves, air/vacuum valves, and combination air valves for water supply service, including material, design, inspection, testing, marking, handling, and packaging for shipment.