ANSI/AWWA **C508-25**

(Revision of ANSI/AWWA C508-17)

AWWA Standard

Swing-Check Valves for Waterworks Service, 2-In. Through 48-In. (50-mm Through 1,200-mm) NPS

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American Water Works Association

Approved American National Standard ANSI

STANDARD Since 1881

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Foreword

This foreword is for information only and is not a part of ANSI/AWWA C508.*

I. Introduction

I.A. *Background*. The swing-check valve has been commonly used in the waterworks industry for over a century. Swing-check valves are designed to prevent backflow by automatically closing upon flow reversal.

I.B. *History*. Following approval by the AWWA Standards Council on June 25, 1970, the Standards Committee on Gate Valves and Swing-Check Valves was assigned the project of preparing a new AWWA standard for swing-check valves. Committee discussion of the first draft began on Nov. 18, 1970. Following an extensive period of discussion and development by user, producer, and general-interest members of that committee, and after extensive review by Committee 112 of the Manufacturers Standardization Society of the Valve and Fittings Industry, the first edition was approved on June 20, 1976. Subsequent editions were approved by the AWWA Board of Directors on Feb. 1, 1982, Jan. 31, 1993, Jan. 21, 2001, Jan. 25, 2009, and Jan. 14, 2017. This edition was approved on Jan. 23, 2025.

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 Water Research Foundation (formerly AwwaRF) and the Conference of State Health and Environmental Managers (COSHEM). 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 agencies may use various references, including

1. Specific policies of the state or local agency.

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* American National Standards Institute, 1180 Avenue of the Americas, 10th Floor, New York, NY 10036.

† NSF International, 789 North Dixboro Road, Ann Arbor, MI 48105.

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

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2. Four standards developed under the direction of NSF: NSF/ANSI/CAN[§] 60, Drinking Water Treatment Chemicals—Health Effects; NSF/ANSI/CAN 61, Drinking Water System Components—Health Effects; NSF/ANSI/CAN 372—Drinking Water System Components—Lead Content; and NSF/ANSI/CAN 600, Health Effects Evaluation and Criteria for Chemicals in Drinking Water.

3. 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/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.

NSF/ANSI/CAN 600 (which formerly appeared in NSF/ANSI/CAN 60 and 61 as Annex A, "Toxicology Review and Evaluation Procedures") 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 NSF/ANSI/CAN 600 procedures may not always be identical, depending on the certifier.

ANSI/AWWA C508 does not address additives requirements. Thus, 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 all parties offering to certify products for contact with, or treatment of, drinking water.

3. Determine current information on product certification.

II. Special Issues

1. The majority of swing-check valves supplied for pump check installations are provided with an assisted closure feature such as a counterweight or spring to reduce check-valve slam. This standard is silent on the design and construction of these features. These requirements should be reviewed with the valve manufacturer.

[§] Standards Council of Canada, 55 Metcalfe Street, Suite 600, Ottawa, ON K1P 6L5 Canada.

[¶] Both publications available from National Academies Press, 500 Fifth Street, NW, Washington, DC 20001.

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2. Some check valve designs may be subject to excessive wear if there is insufficient flow to open the valve fully. Manufacturers can supply information during the valve sizing process to prevent this from occurring.

3. This standard requires that the valves be seat tested at the rated working pressure of the valve (Sec. 5.2.2). For applications where a low operating pressure will be encountered, a special low-pressure leak test pressure should be specified.

4. Chlorine and chloramine degradation of elastomers: The selection of materials is critical for water service and distribution piping in locations where there is a possibility that elastomers will be in contact with chlorine or chloramines. Documented research has shown that elastomers such as gaskets, seals, valve seats, and encapsulations may be degraded when exposed to chlorine or chloramines. The impact of degradation is a function of the type of elastomeric material, chemical concentration, contact surface area, elastomer cross section, and environmental conditions as well as temperature. Careful selection of and specifications for elastomeric materials and the specifics of their application for each water system component should be considered to provide long-term usefulness and minimum degradation (swelling, loss of elasticity, or softening) of the elastomer specified.

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*. The following information should be provided by the purchaser:

1. Standard used—that is, ANSI/AWWA C508, Swing-Check Valves for Waterworks Service, 2-in. Through 48-in. (50-mm Through 1,200-mm) NPS, of latest edition.

2. Whether compliance with NSF/ANSI/CAN 61, Drinking Water System Components—Health Effects, is required, in addition to the requirements of the Safe Drinking Water Act.

3. Size and quantity of check valves.

4. Maximum line pressure.

5. Maximum transient pressure and characteristics, if known.

6. Data required of manufacturer (Sec. 4.2).

7. Details of federal, state, provincial, territorial, and local requirements (Sec. 4.3).

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8. Whether the piping system in which the check valve is to be used carries water that promotes galvanic corrosion and therefore prohibits the use of copper alloy materials containing more than 16 percent zinc (Sec. 4.3.2.2.3).

9. If bolting material having mechanical and chemical properties other than those identified in ASTM A307 is required (Sec. 4.3.2.3).

10. Type of ends required—flanged or mechanical joint, and end-to-end dimensions (Sec. 4.4.2).

11. Detailed description of valve ends, if dimensions or finish are to be other than required (Sec. 4.4.7).

12. Special coatings and linings (Sec. 4.4.12).

13. Special markings required (Sec. 6.1.2).

14. Affidavit of compliance, if required (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. Clarified that this standard is intentionally silent on design and construction of assisted closure features (foreword, Section II Special Issues, Item 1), removed the word "unassisted" from the Scope section (Sec. 1.1), and added a new section for features not covered (Sec. 1.1.6).

2. Clarified conditions of use in the Scope section (Sec. 1.1) and pH range in the Chemical section (Sec. 1.1.5.1).

3. Added new definitions for potable water, raw water, reclaimed water, source water, and wastewater (Section 3).

4. Added option for stainless-steel castings (4.3.2.3).

5. Added option for stainless-steel side plugs (4.4.10).

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

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(Revision of ANSI/AWWA C508-17)

AWWA Standard

Swing-Check Valves for Waterworks Service, 2-In. Through 48-In. (50-mm Through 1,200-mm) NPS

SECTION 1: GENERAL

Sec. 1.1 Scope

This standard describes only iron-body swing-check valves, 2-in. through 48-in. (50-mm through 1,200-mm) NPS, with mechanical-joint or flanged ends that are installed in approximately level settings in source water, potable water, wastewater, and reclaimed water systems having a pH range from 6 to 12 and a temperature range from 33°F to 125°F (0.6°C to 52°C). The manufacturer should be consulted for special conditions. Check-valve sizes described in this standard are 2, 2½, 3, 4, 6, 8, 10, 12, 14, 16, 18, 20, 24, 30, 36, 42, and 48-in. (50, 65, 80, 100, 150, 200, 250, 300, 350, 400, 450, 500, 600, 750, 900, 1,050, and 1,200-mm) NPS. Sizes refer to the nominal diameter of the waterway through the inlet and outlet connections and the seat.

1.1.1 *Seating types.* Check valves may be of the metal-to-metal, resilient-to-metal, or resilient-to-coated seat construction as illustrated in Figure 1.

1.1.2 *Hinge arm types.* Check valves may incorporate either a metal hinge arm or resilient hinge arm as illustrated in Figure 1.

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