



**American Water Works
Association**

The Authoritative Resource on Safe Water®

ANSI/AWWA C508-09
(Revision of ANSI/AWWA C508-01)

AWWA Standard

Swing-Check Valves for Waterworks Service, 2-In. Through 24-In. (50-mm Through 600-mm) NPS



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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 this 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, and Jan. 21, 2001. This edition was approved on Jan. 25, 2009.

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 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.

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

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.

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 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. These requirements should be reviewed with the valve manufacturer.

2. Table 2 will become effective three years from the effective date of this standard.

3. Check valves 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.

* NSF International, 789 N. Dixboro Road, Ann Arbor, MI 48113.

† 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.

4. 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.

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 items should be provided by the purchaser:

1. Standard used—that is, ANSI/AWWA C508, Swing-Check Valves for Waterworks Service, 2-in. Through 24-in. (50-mm Through 600-mm) NPS, of latest revision.

2. Whether compliance with NSF/ANSI 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. Details of other federal, state or provincial, and local requirements (Sec. 4.3).

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

6. 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 bronze materials containing more than 16 percent zinc (Sec. 4.3.2.2.3).

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

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

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

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

11. Special markings required (Sec. 6.1.2).

12. 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. The pressure ratings were revised in Sec. 1.1.4.

2. Standard end-to-end dimensions were moved from the appendix to the body of the standard in Sec. 4.4.2 and Table 2.

3. New ductile-iron flange thicknesses were added to Sec. 4.4.7.1 and Table 3.
4. A new appendix titled "Installation, Operation, and Maintenance of Swing-Check Valves for Waterworks Service" was added.

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.



**American Water Works
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AWWA Standard

Swing-Check Valves for Waterworks Service, 2-In. Through 24-In. (50-mm Through 600-mm) NPS

SECTION 1: GENERAL

Sec. 1.1 Scope

This standard describes only iron body, nonassisted, swing-check valves, 2-in. through 24-in. (50-mm through 600-mm) NPS, with mechanical-joint or flanged ends that are installed in approximately level settings in water systems. 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-, and 24-in. (50-, 65-, 75-, 100-, 150-, 200-, 250-, 300-, 350-, 400-, 450-, 500-, and 600-mm) NPS. Sizes refer to the nominal diameter of the waterway through the inlet and outlet connections and the seat ring.

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 or resilient hinge arm as illustrated in Figure 1.

1.1.3 *Waterway types.* Swing-check valves may be of the clear waterway design (where the disc in the full open position swings clear of the waterway) or the full waterway design (where the disc in the full open position is not clear of the