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ANSI/AWWA C509-09
(Revision of ANSI/AWWA C509-01)

American Water Works Association

The Authoritative Resource on Safe Water®

AWWA Standard

Resilient-Seated Gate Valves for Water Supply Service

Effective date: Nov. 1, 2009.
First edition approved by AWWA Board of Directors Jan. 28, 1980.
This edition approved Jan. 25, 2009.
Approved by American National Standards Institute Sept. 11, 2009.

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Committee Personnel

The C509 Subcommittee, which developed this standard, had the following personnel at that time:

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The AWWA Standards Committee on Gate Valves and Swing Check Valves, which reviewed and approved this standard, had the following personnel at the time of approval:

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Foreword

This foreword is for information only and is not a part of ANSI/AWWA C509.

I. Introduction.

I.A. *Background.* The resilient-seated gate valve has been commonly used in several European countries for many years. This type of valve has proven to be satisfactory in water utility applications. A resilient-seated gate valve similar to the European model was introduced into the United States and has been in service in various water utility applications since 1975.

I.B. *History.* The American Water Works Association (AWWA) requested the assistance of the Manufacturers Standardization Society of the Valve and Fittings Industry (MSS) in providing a standard for resilient-seated gate valves at the 1976 AWWA annual conference.

MSS has played an important role in the development of this standard. The organization was created in 1924, and in 1930, it organized the MSS Water Works Committee and designated representatives for appointment to AWWA standards committees. Since that time, MSS has been particularly active and effective in developing new standards for the water utility industry and in making periodic revisions to existing standards. This edition of ANSI/AWWA C509 was approved by the AWWA Board of Directors on Jan. 25, 2009.

I.C. *Acceptance.* In May 1985, the US Environmental Protection Agency 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

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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.
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 C509 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. This standard has no applicable information for this section.

*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.

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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 C509, Resilient-Seated Gate Valves for Water Supply Service, of latest revision.
2. Whether compliance with NSF/ANSI 61, Drinking Water System Components—Health Effects, is required.
3. Quantity required.
4. Special packaging for shipment as may be required for protection of coatings.
5. Whether the pH level of the water is less than 6.5 or greater than 8.5.
6. Size and type of valve—NRS or OS&Y (Sec. 1.1).
7. If catalog data, net weight, and assembly drawings are required (Sec. 4.1).
8. Details of other federal, state or provincial, and local requirements (Sec. 4.2.1).
9. If test records are required (Sec. 4.2.3).
10. Whether the valve will be subjected to water that promotes galvanic corrosion or that reacts chemically with materials used in these valves and requires the use of alternative materials as described in Sec. 4.2.3.5.3.
11. Other coating requirements (Sec. 4.2.3.9).
12. Cutter diameter must be specified for tapping valves (Sec. 4.3.2). Tapping machine shell cutters are made in either "full size" (OD is full nominal size) or "undersize" (OD is less than full nominal size, i.e., usually ½ in. (13 mm) less [Reference MSS SP-113]).
13. Type of valve ends—flanged, including spot-facing (Sec. 4.4.1.4.1), mechanical joint (Sec. 4.4.1.4.2), push-on joint (Sec. 4.4.1.4.3), or tapping valve flange (Sec. 4.4.1.4.4).
14. End flange requirements for large tapping valves (Sec. 4.4.1.4.4).
15. Whether bolting other than that specified by ASTM* A307 is required. It is recommended that the purchaser verify with the supplier whether specified or requested alternate bolting materials are appropriate. What alternative, if any, is desired in the type of rustproofing for bolts and nuts (Sec. 4.4.4).
16. Type of stem seal-stuffing box or O-ring (Sec. 4.4.6.1.1).

*ASTM International, 100 Barr Harbor Drive, West Conshohocken, PA 19428.

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17. Whether the valve is handwheel or wrench nut operated and direction in which handwheel or wrench nut shall turn to open (Sec. 4.4.7).

18. Detailed description of wrench nut if not in accordance with Sec. 4.4.7.

19. Whether gearing is required (Sec. 4.4.9).

20. If gear casing is required (Sec. 4.4.9.3).

21. If position indicators are required (Sec. 4.4.9.5).

22. Special cast markings (Sec. 6.1), if required.

23. Affidavit of compliance (Sec. 6.3), if required.

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

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

1. Editorial changes to conform to current AWWA form and content.
2. Addition of reduced-thickness ductile-iron flanges.
3. Addition of stainless-steel alloys for use as a stem material.
4. Permitting the use of nonintegral thrust collars for stems in NRS valves.
5. Addition of aluminum–bronze and silicon–bronze copper alloys.
6. Addition of 14-, 18-, and 36-in. valve sizes.
7. Addition of socket head and metric fasteners.
8. Requirement to use an antiseize compound with stainless-steel bolts and nuts.
9. Removal of maximum phosphorus content.

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 the group at standards@awwa.org.

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American Water Works Association

AWWA Standard

Resilient-Seated Gate Valves for Water Supply Service

SECTION 1: GENERAL

Sec. 1.1 Scope

This standard describes iron-body, resilient-seated gate valves with nonrising stems (NRS) and outside screw-and-yoke (OS&Y) rising stems, including tapping gate valves, for water supply service having a temperature range of 33°–125°F (0.6°– 52°C). These valves are intended for applications where fluid velocity does not exceed 16 ft/sec when the valve is in full open position.

1.1.1 *Sizes.* Gate valves described by this standard are 3-in. (75-mm), 4-in. (100-mm), 6-in. (150-mm), 8-in. (200-mm), 10-in. (250-mm), 12-in. (300-mm), 14-in. (350-mm), 16-in. (400-mm), 18-in. (450-mm), 20-in. (500-mm), 24-in. (600-mm), 30-in. (750-mm), and 36-in. (900-mm) nominal pipe size (NPS). Sizes refer to the nominal diameter, in inches (or millimeters), of the waterway through the inlet and outlet connections and the closure area.

1.1.2 *Valve pressure rating.* The minimum design working water pressure shall be 200 psig (1,380 kPa [gauge]) for 3- through 12-in. (75- through 300-mm) sizes and 150 psig (1,034 kPa [gauge]) for 14- through 36-in. (350- through 900-mm) sizes.

1.1.3 *Conditions and materials not described.* This standard is not intended to describe special conditions of gate valve installation or operation, such as built-

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