ANSI/AWWA **C515-20**

(Revision of ANSI/AWWA C515-15)

AWWA Standard

Reduced-Wall, Resilient-Seated Gate Valves for Water Supply Service

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American Water Works Association

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STANDARD Since 1881

AWWA Standard

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Foreword

This foreword is for information only and is not a part of ANSI/AWWA C515.*

I. Introduction.

I.A. *Background.* This standard describes reduced-wall, resilient-seated gate valves with non-rising stems (NRS) and outside screw-and-yoke (OS&Y) rising stems, including tapping gate valves, for water supply service. The standard applies to water supply service having a pH range of 6.5 to 8.5 and a temperature from 33° to 125°F (0.6° to 52°C).

I.B. *History.* The first edition of ANSI/AWWA C509, Resilient-Seated Gate Valves, was published in 1980. ANSI/AWWA C509 includes body and bonnet parts of either gray or ductile cast iron with shell-wall thicknesses equal to those of the ANSI/AWWA C500, Metal-Seated Gate Valves, which was first issued in 1952 as ANSI/AWWA C500 but had its roots going back to the first AWWA standard for gate valves adopted June 24, 1913.

In 1993, the AWWA Standards Committee on Gate Valves and Swing Check Valves received authorization from the AWWA Standards Council to prepare a standard covering reduced-wall, resilient-seated gate valves. Just as other recent AWWA standards have been developed as a result of the attendant strength of ductile iron (for pressure pipe and compact fittings), this standard results from its application for gate valves.

The Manufacturers Standardization Society of the Valves and Fittings Industry (MSS) has played an important role in developing this standard. Founded in 1924, MSS has had official organizational representation on AWWA standards committees dealing with valve and hydrant products since 1930.

The first edition of ANSI/AWWA C515 was approved by the AWWA Board of Directors on Jan. 24, 1999, with subsequent editions approved Jan. 25, 2009 and June 7, 2015. This edition was approved on Oct. 26, 2020.

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)

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

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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. Specific policies of the state or local agency.

2. Two standards developed under the direction of NSF: NSF/ANSI/CAN 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,*[¶] 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 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 C515 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.

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

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

[¶] Both publications are available from The National Academies Press, 500 Fifth Street NW, Keck 360, Washington, DC 20001.

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Some jurisdictions (including California, Maryland, Vermont, and Louisiana) call for reduced lead limits for materials in contact with potable water. Various third-party certifiers have been assessing products against these lead content criteria, and an ANSI-approved national standard, NSF/ANSI 372, Drinking Water System Components—Lead Content, was published in 2010. On Jan. 4, 2011, legislation was signed revising the definition for "lead free" within the Safe Drinking Water Act (SDWA) as it pertains to "pipe, pipe fittings, plumbing fittings, and fixtures." The changes went into effect on Jan. 4, 2014. In brief, the provisions to the SDWA require that these products meet a weighted average lead content of not more than 0.25 percent.

II. Special Issues.

II.A *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, including 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 C515, Reduced-Wall, Resilient-Seated Gate Valves for Water Supply Service, of latest revision.
2. Whether compliance with NSF/ANSI 372, Drinking Water System Components—Lead Content, or an alternative lead content criterion is required.
3. Whether or not the purchaser requires that the cast ferrous valve components, in addition to the body and bonnet, be made of ductile iron.
4. Quantity required.
5. Special packaging for shipment as may be required for protection of coatings.
6. Whether the pH level of the water is less than 6.5 or greater than 8.5.
7. Size and type of valve, NRS or OS&Y (Sec. 1.1).

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8. Whether or not the valve will be used in a corrosive environment (Sec. 1.1.4) determined by methods described in AWWA Manual M27.

9. Catalog data, net weight, and assembly drawings to be provided by the manufacturer (Sec. 4.1), if required.

10. Details of federal, state, and local requirements (Sec. 4.2.1).

11. If test records of valve component materials are required (Sec. 4.2.4.2).

12. Whether or not the valve will be subjected to water that reacts chemically with materials used in these valves. Consultation with the manufacturer is advised to determine the suitability in cases of doubt (Sec. 4.2.4.5.5).

13. Other coating requirements (Sec. 4.2.4.11) and whether coating (Sec. 4.5.2) shall be NSF/ANSI/CAN 61 approved.

14. Cutter diameter must be specified for tapping valves (Sec. 4.3.3).

NOTE: Tapping machine shell-cutters are made in either full size (outside diameter [OD] is full nominal size) or undersize (OD is less than full nominal size, i.e., usually ½ in. [13 mm] less [MSS SP-113]). The purchaser should specify the size of the shell-cutter that the valve must accept.

15. Whether valves 54-in. (1,350-mm) and larger shall have a reduced or full-size waterway (Sec. 4.3.3.2).

16. Type of valve ends—flanged, including dimensions (Sec. 4.4.1.4.1-2), spot facing (Sec. 4.4.1.4.1-3), straddled bolt holes (Sec. 4.4.1.4.1-5), mechanical joint (Sec. 4.4.1.4.2), push-on joint (Sec. 4.4.1.4.3), tapping valve flange (Sec. 4.4.1.4.4), and end flange requirements for large tapping valves (Sec. 4.4.1.4.4-3).

17. Whether or not bolting material with physical and chemical properties other than ASTM A307 is required (Sec. 4.4.4). It is recommended that the purchaser verify with the supplier the appropriateness of any alternative bolting materials required. What alternative, if any, is desired in the type of rustproofing for bolts and nuts (Sec. 4.4.4.1).

18. Type of stem seal for NRS valves (Sec. 4.4.6.1) and for OS&Y valves (Sec. 4.4.6.2).

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

20. Detailed description of wrench nut, if not in accordance with Sec. 4.4.7.1.

21. Whether or not there exists a need for operating torque information and/or maximum input torque (Sec. 4.1.3.1 and Sec. 4.4.8.5).

22. Whether gearing is required (Sec. 4.4.8).

23. Gear material requirements (Sec. 4.4.8.1).

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24. If gear casing is required (Sec. 4.4.8.2).

25. If position indicators are required (Sec. 4.4.8.3).

26. Whether or not records of tests specified in Section 5 are to be provided.

27. Special markings (Sec. 6.1.1.1.1), if required.

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

29. Any special lifting requirements and/or features designed to aid in the receiving and installation of larger valves.

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 revisions made to the standard in this edition include the following:

1. Scope of the standard was expanded to include 60-in (1,500-mm), 66-in (1,650-mm), and 72-in (1,800-mm) diameter gate valves.

2. Packing material requirements were removed from the Purchaser Options and Alternatives.

3. Operating torque information requirements and any special lifting requirements were added as Purchaser Options and Alternatives.

4. Definitions for Potable water, Reclaimed water, and Wastewater were added.

5. Dezincification testing in accordance with ISO 6509 depth criteria was changed to 100 µm.

6. In cases where corrosion is a concern, copper alloy or stainless-steel wrench nuts were added as an option (Sec. 4.4.7).

V. Comments. If you have any comments or questions about this standard, please call 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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AWWA Standard

Reduced-Wall, Resilient-Seated Gate Valves for Water Supply Service

SECTION 1: GENERAL

Sec. 1.1 Scope

This standard describes reduced-wall, resilient-seated gate valves with non-rising 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° to 125°F (0.6° to 52°C).

1.1.1 *Velocity.* These valves are intended for applications where fluid velocity does not exceed 16 ft/sec (4.9 m/sec) when the valve is in the full-open position.

1.1.2 *Sizes.* This standard describes non-rising stem resilient-seated gate valves 3-in. (75-mm) through 72-in. (1,800-mm) nominal pipe size (NPS) and outside screw-and-yoke (OS&Y) rising stem valves, 3-in. (75-mm) NPS through 48-in. (1,200-mm) NPS.

1.1.3 *Valve pressure rating.* The minimum design working water pressure shall be 200 psig (1,380 kPa) for all sizes.

1.1.4 *Conditions and materials not covered.* This standard is not intended to describe special conditions of gate valve installation or operation, such as built-in power drive, installation in unusually corrosive soil, conveyance of unusually corrosive water, excessive water hammer, frequent operation (as in filter service), or

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