



**American Water Works  
Association**

The Authoritative Resource on Safe Water®

ANSI/AWWA C560-07  
(Revision of ANSI/AWWA C560-00)

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*AWWA Standard*

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# Cast-Iron Slide Gates



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## Foreword

*This foreword is for information only and is not a part of ANSI/AWWA C560.*

### I. Introduction.

I.A. *Background.* A cast-iron slide gate is a cast-iron or cast-ductile-iron, vertically sliding valve with metal (usually bronze or stainless steel) seating faces and adjustable metal (usually bronze or stainless steel) wedges. The slide gate consists of a self-contained frame or nonself-contained frame and a slide. Examples of where this type of “valve” is used include the control of water through orifice openings in walls, at the ends of pipes, at the ends of open-top channels, or within open-top channels. Downward opening gates act as weir gates. Slide gates are raised and lowered by means of a stem or rod using a manual or electrically operated screw stem hoist, or by a hydraulic or pneumatic cylinder. Gates are mounted directly to concrete walls with anchor bolts, grouted into blockouts within concrete channel walls, or bolted to a pipe flange or wall thimble. Other terms used to describe single-faced valves include *penstocks* and *sluice gates*. The term *slide gate* has been adopted for use by this series of standards, which supersede ANSI/AWWA C501-92.

ANSI/AWWA C560—Cast-Iron Slide Gates

ANSI/AWWA C561—Fabricated Stainless Steel Slide Gates

ANSI/AWWA C562—Fabricated Aluminum Slide Gates

ANSI/AWWA C563—Fabricated Composite Slide Gates

The slide gates represented by ANSI/AWWA C560 through ANSI/AWWA C563 differ in material and means of sealing between the slide and the fixed frame as described below.

C560 gates have a cast-iron or cast-ductile-iron slide and frame with machined metal seating faces and wedges to force the slide to seal between the seating faces on the slide and frame.

C561 gates have a fabricated, reinforced stainless steel slide and frame with ultra-high molecular weight (UHMW) polyethylene seating faces or resilient rubber seals.

C562 gates have a fabricated, reinforced aluminum slide and frame with UHMW polyethylene seating faces or resilient rubber seals.

C563 gates have fiberglass reinforced composite-plastic or rigid compressed plastic slides with frames of either the same material, stainless steel, or coated carbon steel, UHMW polyethylene bearing surfaces, and use either UHMW polyethylene or resilient rubber to ensure proper sealing.

I.B. *History.* The original AWWA standard for slide gates was approved as tentative on June 26, 1941, and slide gates were referred to as sluice gates. The tentative standard was revised and approved on June 4, 1967, as AWWA Standard C501. Subsequent revisions of ANSI/AWWA C501 were approved by the AWWA Board of Directors on Jan. 28, 1980, June 14, 1987, and June 18, 1992. The next revision of the standard was approved as ANSI/AWWA C560 on June 11, 2000. This edition of ANSI/AWWA C560 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 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, provincial, or local agency.
3. Two standards developed under the direction of NSF<sup>†</sup>, NSF/ANSI<sup>‡</sup> 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*,<sup>§</sup> and other standards considered appropriate by the state or local agency.

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

† 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, N.W., Washington, DC 20001.



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 C560 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.

**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 C560, Cast-Iron Slide Gates, of latest revision.

2. Number of units required.

3. Size and type of closure—conventional or flush-bottom.

4. Design head measured from surface of water to centerline of gate, in ft (m), for the following:

- a. Seating head.

- b. Unseating head.

5. Operating head measured from surface of water to centerline of gate, in ft (m), in both seating and unseating conditions.

6. Type of lift actuator—manual, electric-motor-driven, or hydraulic-cylinder.

If electric-motor-driven or hydraulic-cylinder, the purchaser should refer to ANSI/AWWA C540.

7. Conventional mounted frame or self-contained thrust reaction frame.
8. Upward or downward opening gate.
9. If hydraulic or pneumatic actuators are specified, provide cylinder operating media and pressure (refer to ANSI/AWWA C540, Power-Actuating Devices for Valves and Slide Gates).
10. Definition of any special design and construction required for conditions beyond the scope of this standard, such as throttling service, environmental conditions, sediment, or grit exposure, and intended operation frequency and duration.
11. Frequency of operation and special operating conditions, such as ice formation.
12. An installation requirement drawing showing clearances, wall and floor thicknesses, details of wall pipe and thimble installation, and location of operator.
13. Any drawings and material specifications required of the supplier or of the manufacturer (Sec. 4.1 and 4.2).
14. If test records must be viewed (Sec. 4.3.2).
15. Acceptable materials (Sec. 4.3.3).
16. Rising stem or nonrising stem (Sec. 4.4.7 and 4.4.11).
17. Length and shape of wall thimble or connecting device (Sec. 4.4.10).
18. If an actuator stand is needed (Sec. 4.4.14).
19. Omission of stem covers (Sec. 4.4.13.6), if not required.
20. Leakage tests in the shop (Sec. 5.2.1.2) and in the field (Sec. 5.2.2), if required.
21. Inspection by purchaser, if required (Sec. 5.1).
22. Separate shipment of embedded items (Sec. 6.2).
23. Affidavit of compliance (Sec. 6.3), if required.

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 revision include the following:

1. Additional commentary is provided in the foreword.
2. Ductile iron was added in Sec. 4.3.3.1.
3. Ductile iron and stainless steel were added in Sec. 4.3.3.2.
4. Stainless steel type 316 was added in Sec. 4.3.3.8.
5. Cast-iron class C and stainless steel type 316 were added in Sec. 4.3.3.13.

6. Protective coatings/painting was moved to Sec. 4.5.2.

7. Shop and leakage tests were moved to Sec. 5.2.

**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](mailto:standards@awwa.org).

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**American Water Works  
Association**

ANSI/AWWA C560-07  
(Revision of ANSI/AWWA C560-00)

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*AWWA Standard*

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## **Cast-Iron Slide Gates**

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### **SECTION 1: GENERAL**

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#### **Sec. 1.1 Scope**

This standard describes vertically mounted, cast-iron slide gates designed for either seating head or unseating head, or both, in ordinary water-supply service. The cast-iron slide gates have machined metal faces and machined adjustable wedging devices. The cast-iron slide gates may be used for square, rectangular, or round openings. They may be of the conventional-closure or the flush-bottom-closure type. This standard also describes manual slide gate actuator mechanisms together with standard accessories. Other actuator mechanisms, including electric or hydraulic mechanisms, are described in ANSI/AWWA C540.

#### **Sec. 1.2 Purpose**

The purpose of this standard is to provide the minimum requirements for cast-iron slide gates, including materials, general design, manufacture, testing, inspection, and shipment.

#### **Sec. 1.3 Application**

This standard can be referenced for purchasing and receiving cast-iron slide gates and can be used as a guide for designing and manufacturing cast-iron slide gates. The stipulations of this standard apply when this document has been referenced and then only to cast-iron slide gates used in water supply service application.