



**American Water Works
Association**

Erratum to
ANSI/AWWA C530-07
Standard
for

Pilot-Operated Control Valves

(May 2008)

1. Change Sec. 5.2.3, page 12, to read:

Seat leakage test. Valves shall be shop tested for seat leakage for a duration of 2 min. There shall be no indication of leakage past the valve seat during this test period. The test pressure shall be either the hydrostatic pressure equivalent to working pressure or air pressure no less than 90 psig (621 kPa). The test pressure shall be applied to the seat in the fluid flow direction.



**American Water Works
Association**

ANSI/AWWA C530-07
(First Edition)

The Authoritative Resource on Safe Water®

AWWA Standard

Pilot-Operated Control Valves



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AWWA Standard

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* Liaison, nonvoting

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Foreword

This foreword is for information only and is not a part of ANSI/AWWA C530.

I. Introduction.

I.A. *Background.* Pilot-operated control valves have been in use since the early 1900s in pipelines that carry liquids. Manufacturers of pilot-operated control valves have developed tight-closing, rubber- and metal-seated products for pipeline use in water distribution and power generation. This standard describes two types of pilot-operated control valves: piston and diaphragm type, with globe, wye, and angle body configurations.

Since the late 1940s, pilot-operated control valves have gained increased acceptance for use in water treatment plants, water supply, and distribution and in building heating and air-handling units because they (1) provide tight shutoff; (2) provide for large pressure drops across the valves; (3) are suitable for many functions depending on the pilot; and (4) are relatively easy to operate and maintain.

I.B. *History.* The need for a standard addressing pilot-operated control valves was recognized by the American Water Works Association (AWWA) in November 2001. A committee was appointed for the task of standardization; at the first inaugural meeting in June 2003, a subcommittee was appointed by the chair to develop a standard. This first edition was approved by the AWWA Board of Directors on June 24, 2007.

I.C. *Acceptance.* In May 1985, the US Environmental Protection Agency (USEPA) entered into a cooperative agreement with the consortium led by the NSF International (NSF) to develop voluntary third-party consensus standards and a certification program for all 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

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

1. An advisory program formerly administered by USEPA, Office of Drinking Water, discontinued on April 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 Chemical 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 C530 does not address additive requirements. Users of this standard should consult the appropriate state or local agency having jurisdiction in order to

1. Determine additive requirements, including applicable standards.
2. Determine the status of certification by parties offering to certify products for contact with, or treatment of, drinking water.
3. Determine current information on product certification.

II. Special Issues. Conditions under which the pilot-operated control valve is to be operated must be evaluated carefully by the purchaser. This evaluation must include determination of the hydraulic characteristics of the system in which the valve will be installed and the pilot devices required for operation of the valve, including (1) maximum and static differential pressures across the valve and (2) the range of flow rates through the valve under the most adverse operating conditions. Velocities

* 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.

exceeding 15 ft/sec (4.6 m/sec) must be discussed with the manufacturer. When selecting types of valves, it must be noted that there are various types of control valves with different combinations of pilots and actuation mechanisms.

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 C530, Pilot-Operated Control Valves, 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 of valve.
4. Quantity required.
5. Maximum nonshock inlet pressure.
6. Minimum and maximum pressure drop across the seat.
7. Maximum head loss, if required.
8. Maximum transient pressure and characteristics, if known.
9. Requirements for anticavitation trim.
10. State special devices or features, if required, including number of isolation valves for pilot lines, type of pilot filter element, open–close time speed control requirements, position indication, remote control devices, remote and externally mounted three-position control switches (OPEN–CLOSE–AUTO), pressure gauges, and/or pressure transmitters on inlet and outlet flange taps.
11. Consideration relating to anticipated problems with rubber components exposed to line content containing chlorine, chloramines, or other chemicals. If these problems are anticipated, the purchaser should identify the maximum expected concentrations of these chemicals and other factors, such as pH and temperature ranges, that may affect the corrosivity of these chemicals. The purchaser should consult with the manufacturer and, if appropriate, specify special requirements for these components.
12. Required rate of flow for normal flow conditions and for minimum and maximum flow conditions (Sec. 1.1).
13. Body style (globe, wye, angle) (Sec. 1.1.1).

14. Flow port area (nominal diameter or reduced port) (Sec. 3.0).
15. Certified drawings to be provided by the manufacturer (Sec. 4.1.1).
16. Laying length dimension (Sec. 4.1.1.1).
17. Maximum height from valve centerline to position indicators, including on-site dismantling height requirements (Sec. 4.1.1.1).
18. Maximum space width, including control piping (Sec. 4.1.1.1).
19. Application and pilot type (Sec. 4.1.1.2).
20. Type of pilot-operated control valve, diaphragm or piston (Sec. 4.1.1.2).
21. Additional information for remote operation, such as position transmitters, variable pressure control pilots, limit switches, and/or other configurations (Sec. 4.1.1.2).
22. Installation, operation, and maintenance manual requirements (Sec. 4.1.3).
23. Details of other federal, state or provincial, and local requirements (Sec. 4.2.1).
24. Seat and body material (Sec. 4.2.2).
25. Type of material for pilot lines (stainless steel, copper, or other preferred material) (Sec. 4.2.2).
26. Type of end connection, flanged, groove-joint, or National Pipe Thread (NPT) (Sec. 4.3.4).
27. Body flange class (cast iron class 125 and/or class 250 per ASME B16.1 and ductile iron class 150 or class 300 per ASME B16.42) (Sec. 4.3.4.1).
28. Specify bolt hole drilling pattern class if different from the ANSI class of the flange (Sec. 4.3.4.1).
29. This standard covers flat-faced and raised-faced flanges; the purchasers must clearly specify the type of flange requirements (Sec. 4.3.4.1).
30. Shop inspection by the purchaser, if required (Sec. 5.1.1).
31. Requirement for an affidavit of compliance (Sec. 6.3).

III.B. *Laying length.* Pilot-operated control valves do not have uniform laying lengths. Interchangeability between various manufacturers may not be possible without modification to the existing piping system. The purchaser is cautioned to obtain this information from the manufacturers for verification prior to purchase.

III.C. *Performance Test.* This standard does not require the manufacturer to conduct the performance test on a fully assembled valve. Sec. 5.2.1 allows the manufacturer to conduct the tests separately on the main valve and the related pilots. If the purchaser desires the performance test to be conducted on the fully assembled valve, this requirement should be specified in the purchase documents.

III.D. *Valve Test Media.* The purchaser should review Sec. 5.2 of this standard and inform the supplier of the preferred valve test media. The standard allows testing valves with air at 90 psi and water at 1.5 times the rated design pressure of the valve.

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

IV. Major Revisions. This is the first edition of the standard.

V. Comments. If you have any comments or question about this standard, please call the AWWA Volunteer & Technical Support Group at 303.794.7711, FAX 303.795.7603, write to the group at 6666 West Quincy Avenue, Denver, CO 80235-3098, or e-mail at standards@awwa.org.

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**American Water Works
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ANSI/AWWA C530-07
(First Edition)

AWWA Standard

Pilot-Operated Control Valves

SECTION 1: GENERAL

Sec. 1.1 Scope

This standard establishes minimum requirements for pilot-operated control valves of globe, angle and wye body styles with various end connections in sizes from 1½ in. through 60 in. (37.5 mm through 1,500 mm) in diameter, with water having a pH range from 6 to 9 and a temperature range from 40° to 125° F (4.4° to 52°C). The standard covers piston- and diaphragm-type valves suitable for a maximum steady-state fluid working pressure of 300 psig (2,070 kPa), a maximum steady-state differential pressure of 300 psig (2,070 kPa), and a maximum line velocity of 15 ft/sec (4.6 m/sec).

1.1.1 *Body type and class.* The valves described in this standard are provided in three body types (globe, angle, and wye) with various pilot-operating methods in classes described as follows:

1.1.1.1 Angle body type: Class 125, 150, 250, and 300, ASME flanges, National Pipe Thread (NPT) and grooved joint ends in sizes 1½ to 60 in. (37.5 to 1,500 mm).

1.1.1.2 Globe body type: Class 125, 150, 250, and 300, ASME flanges, NPT and grooved joint ends in sizes 1½ to 60 in. (37.5 to 1,500 mm).

1.1.1.3 Wye body type: Class 125, 150, 250, and 300; ASME flanges,

NPT and grooved joint ends in sizes 1½ to 60 in. (375 to 1,500 mm).

Sec. 1.2 Purpose

The purpose of this standard is to define the minimum requirements for pilot-operated control valves, including sizing considerations, design verification, testing, delivery, handling, and storage.

Sec. 1.3 Application

This standard can be referenced in specifications for pilot-operated control valves, which are described by the scope as defined above.

SECTION 2: REFERENCES

This standard references the following documents. In their latest editions, they form a part of this standard to the extent specified within the standard. In any case of conflict, the requirements of this standard shall prevail.

ANSI^{*}/AWWA C207—Steel Pipe Flanges for Water Works Service Sizes 4 In. through 144 In. (100 mm through 3,600 mm).

ANSI/AWWA C550—Protective Epoxy Interior Coatings for Valves and Hydrants.

ANSI/AWWA C606—Grooved and Shouldered Joints.

ASME[†] B16.1—Cast Iron Pipe Flanges and Flange Fittings: Classes 25, 125, and 250.

ASME B16.42—Ductile Iron Pipe Flanges and Flange Fittings: Classes 150 and 300.

ASME B16.5—Pipe Flanges and Flange Fittings: NPS ½ In. through NPS 24 In.

ASTM[‡] A36—Standard Specification for Carbon Structural Steel.

ASTM A48—Standard Specification for Gray Iron Castings.

ASTM A108—Standard Specification for Steel Bar, Carbon, and Alloy, Cold-Finished.

ASTM A126—Standard Specification for Gray Iron Casting for Valves, Flanges, and Pipe Fittings.

* American National Standards Institute, 25 West 43rd Street, Fourth Floor, New York, NY 10036.

† ASME International, Three Park Avenue, New York, NY 10016.

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