ANSI/AWWA **C702-19**

(Revision of ANSI/AWWA C702-15)

AWWA Standard

Cold-Water Meters—Compound Type

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American Water Works Association

Approved American National Standard ANSI

STANDARD Since 1881

AWWA Standard

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Committee Personnel

The AWWA Subcommittee on Compound and Fire-Service Meters, which developed this standard, had the following personnel at the time:

George H. De Jarlais, *Chair*

M.J. Aragon, Denver Water, Denver, Colo.
R.A. Barillas, Badger Meter, Milwaukee, Wis.
T.D. Bianchi, Neptune Technology Group Inc., Tallassee, Ala.
M.C. Bowen, City of Columbus, Division of Water, Columbus, Ohio
D. Casper, Mueller Systems, Cleveland, N.C.
J. Conover Jr., City of Sacramento, Sacramento, Calif.
G.H. De Jarlais, Badger Meter, Milwaukee, Wis.
D. Faber, Faber & Associates, Columbus, Ind.
R. Gallon, Zenner USA, Banning, Calif.
L. Gregory, RG3 Meter Company, Longview, Tex.
A. Hendey Sr., Hendey Meter, Beaumont, Calif.
D.E. Hood, M.E. Simpson Company Inc., Valparaiso, Ind.
A.M. Horbovetz, M.E. Simpson Company Inc., Valparaiso, Ind.
R.N. Koch, Master Meter Inc., Pittsburgh, Pa.
J. Pintok, RG3 Meter Company, Lake Mary, Fla.
J.A. Reiss, Elster AMCO Water LLC, Ocala, Fla.
J.R. Scarborough III, Neptune Technology Group Inc., Tallassee, Ala.
T. Smith, Sensus, Morrisville, N.C.
S.M. Swanson, Sensus, Uniontown, Pa.
M.A. Thomas, Mueller Systems, Cleveland, N.C.
W.J. Vetter, Master Meter Inc., Mansfield, Tex.
A.M. Watson, Elster AMCO Water LLC, Ocala, Fla.

The AWWA Standards Committee on Water Meters, which reviewed and approved this standard, had the following personnel at the time of approval:

Thomas A. Kelly Jr., *Chair*
Michael L. Mastic, *Secretary*

General Interest Members

J.E. Cray, Wright-Pierce, Andover, Mass.
A. Dabak, Texas Instruments, Dallas, Tex.

D. Faber, Faber & Associates, Columbus, Ind.

R.C. Graff, Poway, Calif.

J.G. Gunn (*alternate*), Johnson Controls Inc., Victor, N.Y.

C.C. Hannah, Johnson Controls, Inc., Lubbock, Tex.

D.E. Hood, M.E. Simpson Company Inc., Valparaiso, Ind.

A.M. Horbovetz (*alternate*), M.E. Simpson Company Inc., Valparaiso, Ind.

M.C. Johnson, Utah Water Research Laboratory, Utah State University, Logan, Utah

F.S. Kurtz (*liaison, nonvoting*), Standards Engineer Liaison, AWWA, Denver, Colo.

M.L. Mastic, MARS Company, Ocala, Fla.

R.A. Richter, National Institute of Standards and Technology, Gaithersburg, Md.

S. Thakurdesai (*alternate*), Texas Instruments, Dallas, Tex.

Producer Members

F.J. Begale (*alternate*), Badger Meter, Milwaukee, Wis.

T.D. Bianchi, Neptune Technology Group Inc., Tallassee, Ala.

C. Brunson (*alternate*), Neptune Technology Group Inc., Tallassee, Ala.

D. Casper (*alternate*), Mueller Systems, Cleveland, N.C.

M.D. Cole, Meter Technology Werks, Tampa, Fla.

G.H. De Jarlais, Badger Meter, Milwaukee, Wis.

D.J. Devane, Zenner USA, Leeds, Ala.

L. Gregory (*alternate*), RG3 Meter Company, Longview, Tex.

A. Hendey Sr., Hendey Meter, Beaumont, Calif.

R.N. Koch, Master Meter Inc., Pittsburgh, Pa.

M. Laird (*alternate*), Metron-Farnier LLC, Boulder, Colo.

J.A. McCraven, Mueller Systems, Cleveland, N.C.

J. Pintok, RG3 Meter Company, Lake Mary, Fla.

J.A. Reiss (*alternate*), Elster AMCO Water LLC, Ocala, Fla.

M. Shamley, Metron-Farnier LLC, Boulder, Colo.

T. Smith (*alternate*), Sensus, Morrisville, N.C.

S.M. Swanson, Sensus, Uniontown, Pa.

W.J. Vetter (*alternate*), Master Meter Inc., Mansfield, Tex.

A.M. Watson, Elster AMCO Water LLC, Ocala, Fla.

User Members

M.J. Aragon, Denver Water, Denver, Colo.
M.C. Bowen, City of Columbus, Division of Water, Columbus, Ohio
J. Conover Jr., City of Sacramento, Sacramento, Calif.
W.F. Dunnill, Consolidated Utility District of Rutherford County, Murfreesboro, Tenn.
W.M. Garfield, Arizona Water Company, Phoenix, Ariz.
G.M. Gehringer, City of Philadelphia, Philadelphia, Pa.
D. Griffin, City of Winnipeg Water and Waste Department, Winnipeg, Man.
P.A. Hayes, Mammoth Community Water District, Mammoth Lakes, Calif.
D.M. Hill, American Water, Voorhees, N.J.
N.D. Kaufman, Truckee Donner Public Utility District, Truckee, Calif.
T.A. Kelly Jr., Washington Suburban Sanitary Commission, Laurel, Md.
A. Land, Dallas Water Utilities, Dallas, Tex.
S.U. Mills-Wright (*liaison, nonvoting*), Standards Council Liaison, Dallas Water Utilities, Dallas, Tex.
R. Molhoek, Desert Water Agency, Palm Springs, Calif.
K.C. Molli, Veolia Water North America, Chicago, Ill.
J.A. Novak, Milwaukee Water Works, Milwaukee, Wis.
R. Sloan, Birmingham Water Works Board, Birmingham, Ala.
D. Strub, Austin Water Utility, Austin, Tex.

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All AWWA standards follow the general format indicated subsequently. Some variations from this format may be found in a particular standard.

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Foreword

This foreword is for information only and is not a part of ANSI/AWWA C702.*

I. Introduction.

I.A. *Background.* The first compound-type water meter was developed in 1914, when it became evident that there was a need for a measuring device combining a valve with a small displacement-type bypass meter. The new meter would, by design, divert and register water at flow rates below the minimum flow-rate capability of the main water-line meter, which was usually of the turbine type.

Initially, standard meters of the turbine type and displacement type were assembled into units with suitable valves. Mainline meter cases were first made of cast iron, but after five or six years, some were made of bronze. In the field, meters were also converted to the compound type by the attachment of bypass meters and diversion valves.

Currently, some compound-type meters are made almost entirely of bronze in single mainline cases. Others continue to be constructed with cast-iron cases. Some compound-type meters are assembled units, particularly those in large sizes. Compound-type meters have applications in commercial, industrial, and institutional services where wide ranges of flow rates are encountered.

I.B. *History.* The first standard that covered compound-type meters was adopted by the New England Water Works Association (NEWWA) in March 1923, and by the American Water Works Association (AWWA) on May 24, 1923. On Jan. 14, 1946, the standard was approved as tentative as AWWA 7M.3-T. On July 25, 1947, the standard was approved under the designation 7M.3-1947/C702-47. Subsequent editions of the standard were approved by the AWWA Board of Directors on Jan. 26, 1970; Jan. 28, 1978; June 22, 1986; June 18, 1992; Jan. 21, 2001; Jan. 17, 2010; and Jan. 24, 2015. This edition was approved on Oct. 28, 2019.

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) and the Conference of State Health and Environmental Managers (COSHEM). AWWA and the Association of State Drinking Water Administrators (ASDWA) joined later.

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

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, local, or provincial 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.

In an alternative approach to inadvertent drinking water additives, some jurisdictions (including California, Louisiana, Maryland, and Vermont at the time of this writing) are calling 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 a first-edition 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 new

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

† NSF International, 789 North Dixboro Road, Ann Arbor, MI 48105.

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

§ Both publications available from National Academy of Sciences, 500 Fifth Street, N.W., Washington, DC 20001.

provisions to the SDWA require that these products meet a weighted average lead content of not more than 0.25 percent.

ANSI/AWWA C702 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.

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, environmental conditions, and 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 C702, Cold-Water Meters—Compound Type, of latest edition.

2. Whether compliance with NSF/ANSI/CAN 61, Drinking Water System Components—Health Effects; NSF/ANSI 372, Drinking Water System Components—Lead Content; or an alternative lead content criterion is required.

3. If specific warranty provisions will be required.

4. Limitations on acceptable materials, if any, as referenced throughout Sec. 4.1.

5. Details of federal, state, and local requirements (Sec. 4.1).

6. Restrictions on corrosion-resistance treatment process (Sec. 4.1.8), if any.

7. Sizes of meters (Sec. 4.2.1) and quantity required.

8. Length of filler piece (Sec. 4.2.3) if required.

9. Modifications to test specifications (Sec. 4.2.6) if operating water temperatures will exceed 80°F (27°C) (Sec. A.5.2).

10. Round or oval flanges on 2-in. (50-mm) meters (Sec. 4.3.3.1).

11. If companion flanges, gaskets, bolts, and nuts (Sec. 4.3.4) are to be provided, and designation of flange material (Sec. 4.1.9) if other than cast iron is desired.

12. If main casing is to be provided with tapped boss for field-testing purposes (Sec. 4.3.5).

13. Details of register to be provided: US gallons, cubic feet, or cubic meters; with or without center-sweep test hand; open, sealed, or permanently sealed (Sec. 4.3.6).

14. If an encoder-type register or an adapter (Sec. 4.3.7) is required.

15. If meters are to be provided with strainers (Sec. 4.3.14). If strainers are requested, specify whether they are internal or external and whether the strainer shall be removable without removing the meter from the service line.

16. Whether the meter serial number is to be imprinted on the main case (Sec. 4.4).

17. If an affidavit of compliance (Sec. 6.2), a certificate of testing accuracy (Sec. A.3.3), or both are to be provided.

18. Special materials required, if any, to resist corrosion if water is highly aggressive (Sec. A.5.3).

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. The major revisions to the standard in this edition include the following:

1. Guidance on selection of materials in terms of chlorine and chloramine degradation of elastomers has been provided in the foreword (Sec. II.A).

2. A requirement for a maximum registration for the bypass meter has been added (Sec. 4.2.6.3).

3. Reference to ANSI/AWWA C706 on Direct-Reading, Remote-Registration Systems for Cold-Water Meters has been removed (Sec. 4.3.7). (ANSI/AWWA C706 was withdrawn as an AWWA standard in 2015.)

4. Provisions for meter marking have been moved from Sec. 6.1 to Sec. 4.4. (The content of the requirements is unchanged.)

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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American Water Works Association
Dedicated to the World's Most Important Resource®

AWWA Standard

Cold-Water Meters—Compound Type

SECTION 1: GENERAL

Sec. 1.1 Scope

This standard describes the various types and classes of cold-water compound-type meters in sizes 2 in. (50 mm) through 8 in. (200 mm), and the materials and workmanship used in their fabrication. Compound meters shall consist of a combination of a turbine-type mainline meter for measuring high rates of flow and a bypass meter of an appropriate size for measuring low rates of flow. The compound meter shall have an automatic valve mechanism for diverting low rates of flow through the bypass meter.

Sec. 1.2 Purpose

The purpose of this standard is to provide the minimum requirements for compound-type cold-water meters, including materials and design.

Sec. 1.3 Application

This standard can be referenced in specifications for purchasing and receiving compound-type cold-water meters. This standard can be used as a guide for manufacturing this type of meter. The stipulations of this standard apply when this document has been referenced, and then only to compound-type cold-water meters.