



**American Water Works
Association**

The Authoritative Resource on Safe Water®

ANSI/AWWA C708-11
(Revision of ANSI/AWWA C708-05)

AWWA Standard

Cold-Water Meters— Multijet Type



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AWWA Standard

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Foreword

This foreword is for information only and is not a part of ANSI/AWWA C708.*

I. Introduction.

I.A. *Background.* For the past century, no tool available to water utilities has played a greater part in water conservation than the water meter. It has reduced waste and distributed the cost of operating a water system in the most equitable manner possible. Multijet meters, which were first designed and produced in 1867, have proved satisfactory for measuring domestic water service.

In inferential-type meters, the moving element is a rotor; the basic principle of this meter is to design it in such a manner that, over the working range of the instrument, the speed of rotation of the rotor bears a linear relationship to the velocity of flow through the meter.

In multijet meters, the moving element takes the form of a multiblade rotor mounted on a vertical spindle within a cylindrical measuring chamber. The liquid enters the measuring chamber through several tangential orifices around the circumference and leaves the measuring chamber through another set of tangential orifices placed at a different level in the measuring chamber.

I.B. *History.* Advances made in the development of nonmetallic materials for water meter construction have been recognized in the materials section of this standard. Several plastic materials are currently being used successfully for meter components. Several suitable plastic materials are included in this revision.

The first edition of the standard was approved by the AWWA Board of Directors on June 20, 1976. Subsequent editions of this standard were approved on Feb. 1, 1982; Jan. 27, 1991; June 23, 1996; and Jan. 16, 2005. This edition was approved on June 12, 2011.

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, now Water Research Foundation[†]) and the Conference of

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

† Water Research Foundation, 6666 W. Quincy Avenue, Denver, CO 80235.

State Health and Environmental Managers (COSHEM). The American Water Works Association 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

An advisory program formerly administered by USEPA, Office of Drinking Water, discontinued on Apr. 7, 1990.

1. Specific policies of the state or local agency.
2. 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.
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 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.

In an alternative approach to inadvertent drinking water additives, some jurisdictions (including California, 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,

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

† NSF International, 789 N. Dixboro Rd., Ann Arbor, MI 48105.

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

and a new ANSI-approved national standard, NSF/ANSI 372, Drinking Water System Components—Lead Content, was published in 2010.

ANSI/AWWA C708 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.

II.A. *Fire flow.* The meters described in this standard are not designed to be used in water service piping intended to extinguish fire. Requirements for residential fire service products and combined residential domestic/fire service products are currently being developed as a part of a new ANSI/AWWA water meter standard.

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 C708, Standard for Cold-Water Meters—Multijet Type, of latest revision.
2. Whether compliance with NSF/ANSI 372, Drinking Water System Components—Lead Content; NSF/ANSI 61, Drinking Water System Components—Health Effects; or an alternative lead content criterion is required.
3. If warranty requirements will be specified.
4. If the meter is to be read in US gallons, cubic feet, or cubic meters.
5. Details of other federal, state or provincial, and local requirements (Sec. 4.1).
6. If main cases are to be constructed of a copper alloy, stainless steel, or a suitable engineering plastic (Sec. 4.1.2).
7. If meters are to be provided with cast-iron, stainless-steel, copper-alloy, or suitable engineering plastic top or bottom covers (Sec. 4.1.11), and if there is a preference.
8. Size of meter (Sec. 4.2.1) and quantity required.
9. If corrosion protection is required, such as for cast-iron frost-protection covers (Sec. 4.2.6), and if there is a preference.
10. Modifications of test specifications (Sec. 4.2.8) if operating water temperatures will exceed 80°F (27°C) (Sec. A.4.2).

11. If 1½-in. (40-mm) and 2-in. (50-mm) meters (Sec. 4.3.3) are to be provided with flanged ends or threaded (spud) ends. If threaded (spud) ends are required, specify if threads are to be external NPSM or internal NPT.

12. If couplings (tailpieces) are to be provided with ⅝-in. (15-mm) to 2-in. (50-mm) meters (Sec. 4.3.4) and whether components are to be of a copper alloy, stainless steel, or a suitable engineering plastic (Sec. 4.1.9).

13. If companion flanges, gaskets, bolts, and nuts are to be provided with flanged meters (Sec. 4.3.5) and whether companion flanges are to be made of a copper alloy, cast iron, stainless steel, or a suitable engineering plastic (Sec. 4.1.10).

14. Details of the register to be provided (i.e., US gallons, cubic feet, or cubic meters; dry or wet register) (Sec. 4.3.6).

15. If a direct-reading remote register or an encoder-type remote register is required (Sec. 4.3.8), including specifications in detail, and including detailed warranty requirements as to battery life and compatibility with various RF reading devices.

16. If the size of individual meters will be permanently marked on the register dial face (Sec. 6.1).

17. If an affidavit of compliance (Sec. 6.3) and certificate of testing for accuracy (Sec. A.2.3) are required.

18. Special materials required, if any, to resist corrosion if water is highly aggressive (Sec. A.4.3).

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. In Sec. 4.1.2, *Main casings*, austenitic stainless steel has been added as a material choice.

2. In Sec. 4.1.5, *Measuring rotors*, vulcanized hard rubber has been removed as a material choice.

3. Previous Sec. 4.3.6.3, *Mechanical details*, has been removed, with resulting renumbering of the sections that follow it.

4. In Sec. 4.3.6.4.1, guidance on reading resolution for the graduations on the initial test index circle has been provided.

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



**American Water Works
Association**

AWWA Standard

Cold-Water Meters—Multijet Type

SECTION 1: GENERAL

Sec. 1.1 Scope

This standard describes cold-water, multijet meters in sizes $\frac{5}{8}$ in. (15 mm) through 2 in. (50 mm) for water utilities' customer service and the materials and workmanship employed in their fabrication. These meters register by recording the revolutions of a rotor set in motion by the force of flowing water striking the blades.

Sec. 1.2 Purpose

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

Sec. 1.3 Application

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

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.