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(Revision of ANSI/AWWA C713-05)

American Water Works Association

The Authoritative Resource on Safe Water®

AWWA Standard

Cold-Water Meters—Fluidic-Oscillator Type

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AWWA Standard

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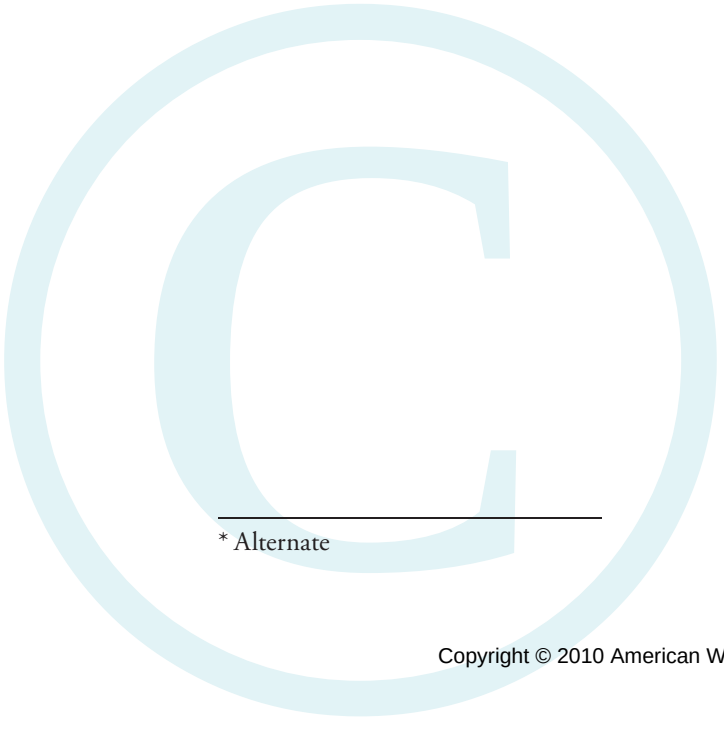

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Contents

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 C713.*

I. Introduction.

I.A. *Background.* Fluidic-oscillator meters covered by this standard represent a new measurement technique that differs from those used in other AWWA standards. The basis for volume measurement is a transducer element that utilizes fluidic oscillation in place of the moving mechanical element required in most traditional cold-water volumetric meters.

Flowing water enters the transducer and a converging entrance nozzle forms a jet flow. Two diverging walls produce opposing forces on the jet flow due to the Coanda† effect and cause the jet to oscillate. Each oscillation corresponds to a specific volume of water flowing through the meter, and these are electronically detected, integrated, and displayed on the register.

I.B. *History.* While the knowledge of fluidic principles is quite old, it was not until the 1960s that fluidic devices began to be used commercially in measurement and control applications. Fluidic-oscillator meters were initially used in both gas and liquid industrial measurement because of high costs. Within the last 10 or 15 years, advances in electronics have made reductions in size and power requirements possible and have made fluidic-oscillator meters commercially feasible for residential water use measurement.

This standard was developed by AWWA Subcommittee 380.10, which was originally formed on June 10, 2000, to develop a standard for solid-state meters of capacity and application similar to ANSI/AWWA C700.

On June 15, 2002, the work of the subcommittee was redirected to develop a standard for fluidic-oscillator meters. The first edition of the standard was approved by the AWWA Board of Directors on Jan. 16, 2005. This edition was approved on Jan. 17, 2010.

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

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

† The Coanda effect is the observed tendency of a stream of fluid emerging from a nozzle to follow a nearby curved or flat surface. The effect was discovered in the 1930s by Henri-Marie Coandă.

Foundation (AwwaRF) (now the Water Research Foundation) 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 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 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.

ANSI/AWWA C713 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.

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* 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.

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, Standard for Cold-Water Meters—Residential Fire Service Type.

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 C713, Standard for Cold-Water Meters—Fluidic-Oscillator Type, of latest revision.

2. Whether compliance with NSF/ANSI 61, Drinking Water System Components—Health Effects, is required.

3. Details of other federal, state or provincial, and local requirements (Sec. 4.1).

4. Whether the main case shall be of conventional double case construction or of modified double case construction (Sec. 4.1.2), and if there is a preference.

5. If meters are to be furnished with cast iron, stainless steel, copper alloy, or suitable engineering plastic top or bottom covers (Sec. 4.1.5.1 and Sec. 4.1.5.2), and if there is a preference.

6. If meters are to be furnished with breakable bottom covers (frost protection devices) (Sec. 4.1.5.2). Breakable bottom covers are only to be used for meter sets properly equipped to handle functioning failed frost bottoms that can flood surroundings with pressurized water when thawing occurs.

7. If meters are to be furnished with full polymer liners (Sec. 4.1.5.2).

8. Size of meters (Sec. 4.2.1) and number of units required.

9. If meters are to be furnished with coupling nuts and tailpieces (Sec. 4.3.2.1) and whether they are to be copper alloy or suitable engineering plastic (Sec. 4.1.7).

10. If 1½-in. (40-mm) and 2-in. (50-mm) meters are to be furnished with flanged ends or threaded (spud) ends (Sec. 4.3.2.2).

11. If flanged meters are to be furnished with companion flanges, gaskets, bolts, and nuts (Sec. 4.3.2.2).

12. If meters are to be furnished with direct-reading registers, pulse-output registers, or encoder-type registers (Sec. 4.3.3.1).

13. If compliance with ANSI/AWWA C706, Standard for Direct-Reading, Remote-Registration Systems for Cold-Water Meters, is to be required for meters that will be connected to direct-reading, visual-remote counters (Sec. 4.3.3.2).

14. If compliance with ANSI/AWWA C707, Standard for Encoder-Type Remote-Registration Systems for Cold-Water Meters, is to be required for meters that will be connected to encoder-type remote systems (Sec. 4.3.3.2).

15. Whether meter batteries shall be replaceable or nonreplaceable (Sec. 4.3.7), and if there is a preference.

16. If an affidavit of compliance (Sec. 6.3) and certificate of testing for accuracy (Sec. A.3.3) are 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. The major revisions to the standard in this edition include the following:

1. In Sections 4.2 and 4.3, provisions for ½ in. × ¾ in. (13 × 20 mm) size meters have been added. Tables 1 and 2 now include this additional meter size.

2. In Sec. 4.3.3, the minimum register digit size has been changed from 3⁄16 in. (4.8 mm) to 5⁄32 in. (3.97 mm), and a provision for billable units has been added.

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 the group at standards@awwa.org.

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(Revision of ANSI/AWWA C713-05)

American Water Works Association

AWWA Standard

Cold-Water Meters—Fluidic-Oscillator Type

SECTION 1: GENERAL

Sec. 1.1 Scope

This standard describes cold-water fluidic-oscillator meters with brass main cases in sizes ½ in. (13 mm)* through 2 in. (50 mm) and the materials and workmanship employed in their fabrication. The basis for volume measurement is a transducer element that senses and utilizes fluidic oscillation rather than a moving measurement element, as required in traditional cold-water volumetric meters.

Sec. 1.2 Purpose

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

Sec. 1.3 Application

This standard can be referenced in specifications for purchasing and receiving cold-water meters—fluidic-oscillator type. 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 only to cold-water meters—fluidic-oscillator type.

* Metric conversions given in this standard may be either rounded, truncated, or direct conversions of the US customary units and are not necessarily those specified in International Organization for Standardization (ISO) Standards.