

American Water Works Association

ANSI/AWWA C712-02

(First Edition)



AWWA STANDARD
FOR
COLD-WATER METERS—
SINGLEJET TYPE



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AMERICAN WATER WORKS ASSOCIATION

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Foreword

This foreword is for information only and is not a part of AWWA C712.

I. Introduction

I.A *Background.* This is the initial release by the AWWA for Cold-Water Meters—Singlejet Type. The subcommittee that drafted this standard was formed in June of 1998 from the Water Meter Standards Committee of AWWA.

Singlejet meters have been available commercially in the United States and Canada for use in potable water applications since 1991.

The singlejet type, like some class I turbine (with helical blades or flat blades) and multijet types, is an inferential meter in which the moving element is a multi-bladed rotor, mounted on a vertical spindle within a cylindrical cavity. The operating objective is to have the speed of rotation of the rotor be linearly proportional to the velocity of the water flow through the meter.

The singlejet-type meter has one large opening at the inlet side that gradually reduces in diameter, resulting in the water flow becoming a jetting action, usually integral with the maincase that directs the water flow against the rotor. The opening is sized to achieve the above linear speed objective. Most singlejet meters do not have a separate measuring chamber to house the rotor and jet nozzle. Also, the singlejet type differs in that it does not usually employ a valved bypass to adjust the rotor speed, as is done on many multijet and turbine-type meters. In a singlejet, rotor speed adjustments are made by either gear selection in the register or by moving the upper or lower damping vane's position relative to the rotor surfaces, thereby adjusting the fluid drag effects on rotor speed.

I.B *History.* Early European references to singlejet (originally called Faller) meters date back to the turn of the century. An early text reference can be found in an article by G. Daries, engineer for the Water Service in Paris, France, entitled “Note on Water Meters,” published in 1911, in which he questions the early design's accuracy and longevity. These meters were used primarily in Europe and Asia where low price was of more concern than performance.

In the 1950s and 1960s, some American water meter companies produced low-cost singlejet meters in relatively small numbers for the submetering and export markets.

With the advent of the modern singlejet meter in the 1970s, the deficiencies in performance and durability were reduced from the earlier designs of singlejet meters.

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 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

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, ANSI[†]/NSF[‡] 60, Drinking Water Treatment Chemicals—Health Effects, and ANSI/NSF 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 ANSI/NSF 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 ANSI/NSF 61 does not stipulate a maximum allowable level (MAL) of a contaminant for substances not

* Persons in Canada, Mexico, and non-North American countries should contact the appropriate authority having jurisdiction.

† American National Standards Institute, 25 W. 43rd Street, 4th Floor, New York, NY 10036-7406.

‡ NSF International, 789 North Dixboro Road, Ann Arbor, MI 48105-9723.

§ Both publications available from National Academy of Sciences, 2101 Constitution Avenue, N.W., Washington, DC 20418-0006.

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.

AWWA C712 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 all 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. AWWA has no responsibility for the suitability or compatibility of the provisions of this standard to any intended application by any user. Accordingly, each user of this standard is responsible for determining that the standard’s provisions are suitable for and compatible with that user’s intended application.

III.A Purchaser Options and Alternatives. When placing orders for meters manufactured according to the provisions of this standard, it will be necessary for the purchaser to supply specific information regarding the following:

1. Standard used—that is, AWWA C712, Standard for Cold-Water Meters—Singlejet Type, of latest revision.
2. Whether maincases are to be constructed of a copper alloy or a suitable engineering plastic (Sec. 4.1.2).
3. Size of meter (Sec. 4.2.1) and quantity required.
4. Modifications of test specifications (Sec. 4.2.8) if operating water temperatures will exceed 80°F (27°C) (Sec. A.4.2).
5. Type of connections for 1½-in. (40-mm) and 2-in. (50-mm) meters (Sec. 4.3.3).
6. Whether couplings (tailpieces) are to be provided (Sec. 4.3.4) and whether components are to be of a copper alloy or a suitable engineering plastic (Sec. 4.1.9).
7. Whether 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, or a suitable engineering plastic (Sec. 4.1.10).
8. Details of the register to be provided (i.e., US gallons, cubic feet, or cubic meters; dry or wet register) (Sec. 4.3.6).

9. If a direct-reading remote register or a remote encoder-type register is required (Sec. 4.3.7), to be specified in detail.

10. If warranty requirements will be specified (Sec. 5.1).

11. Whether an affidavit of compliance will be required (Sec. 6.3).

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

13. The purchaser should state whether compliance with ANSI/NSF 61 Drinking Water System Components—Health Effects, is to be required, in addition to the requirements of the Safe Drinking Water Act. If this certification is to be required, the purchaser's specification shall read, "This product shall be certified as suitable for contact with drinking water by an accredited certification organization in accordance with ANSI/NSF Standard 61, Drinking Water Systems Components—Health Effects."

III.B Modification to Standard. Any modification of the provisions, definitions, or terminology in this standard must be provided in the purchaser's specifications.

IV. Major Revisions. This standard has no applicable information for this section.

V. Comments. If you have any comments or questions about this standard, please call the AWWA Volunteer & Technical Support Group, (303) 794-7711 ext. 6283, FAX (303) 795-7603, or write to the group at 6666 W. Quincy Ave., Denver, CO 80235.