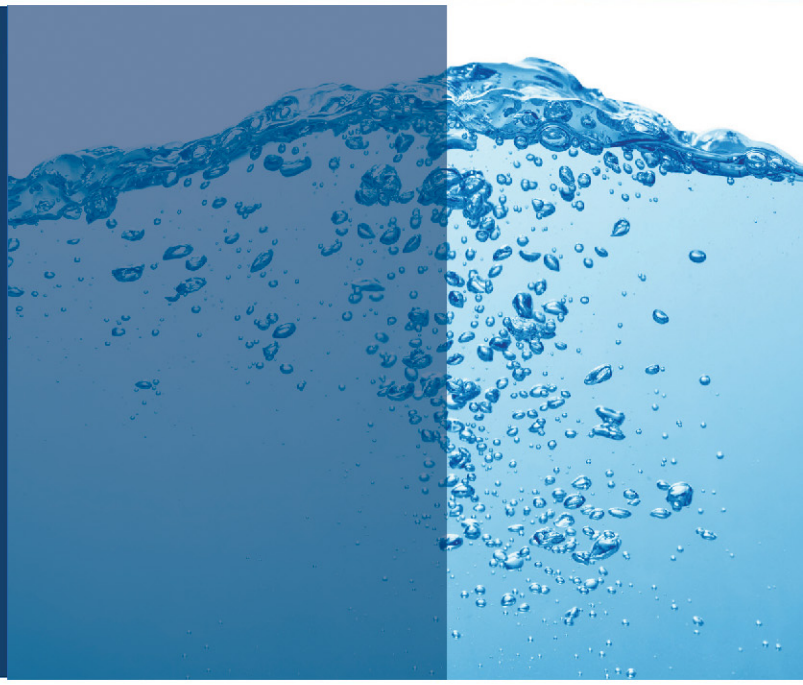
ASME A112.4.2-2015/ CSA B45.16:15
(reaffirmed 2020)

Personal hygiene devices for water closets



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Personal hygiene devices for water closets

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Preface

This is the first edition of ASME A112.4.2/CSA B45.16, *Personal hygiene devices for water closets*.

This joint Standard was developed in response to an industry request for testing that would be acceptable in both Canada and the United States. Its coverage is restricted to personal hygiene devices. Harmonized standards for plumbing fixtures made of other materials are also available or under development.

This Standard replaces the previous edition of ASME A112.4.2, *Water Closet Personal Hygiene Devices*, published in 2009 and 2003.

This Standard was prepared by the ASME/CSA Joint Harmonization Task Group on Plumbing Fixtures, under the jurisdiction of the ASME Standards Committee A112 on Plumbing Materials and Equipment and the CSA B45 Technical Committee on Plumbing Fixtures. The CSA Technical Committee operates under the jurisdiction of the CSA Strategic Steering Committee on Plumbing Products and Materials. This Standard has been formally approved by the ASME Standards Committee A112 and the CSA Technical Committee. This Standard was approved as an American National Standard by the American National Standards Institute on June 18, 2015.

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A request for interpretation should be clear and unambiguous. The request should

- *cite the applicable edition of the Standard for which the interpretation is being requested.*
- *phrase the question as a request for an interpretation of a specific requirement suitable for general understanding and use, not as a request for an approval of a proprietary design or situation. The inquirer may also include any plans or drawings, which are necessary to explain the question; however, they should not contain proprietary names or information.*

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CSA Notes:

(1) *Use of the singular does not exclude the plural (and vice versa) when the sense allows.*

(2) *Although the intended primary application of this Standard is stated in its Scope, it is important to note that it remains the responsibility of the users of the Standard to judge its suitability for their particular purpose.*

(3) *This publication was developed by consensus, which is defined by* CSA Policy governing standardization — Code of good practice for standardization *as "substantial agreement. Consensus implies much more than a simple majority, but not necessarily unanimity". It is consistent with this definition that a member may be included in the Technical Committee list and yet not be in full agreement with all clauses of this publication.*

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(a) define the problem, making reference to the specific clause, and, where appropriate, include an illustrative sketch;
(b) provide an explanation of circumstances surrounding the actual field condition; and
(c) where possible, phrase the request in such a way that a specific "yes" or "no" answer will address the issue.

Committee interpretations are processed in accordance with the CSA Directives and guidelines governing standardization and are available on the Current Standards Activities page at ***standardsactivities.csa.ca****.*

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(b) relevant clause, table, and/or figure number;
(c) wording of the proposed change; and
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ASME A112.4.2-2015/CSA B45.16-15
Personal hygiene devices for water closets

1 Scope

1.1
This Standard covers personal hygiene devices for water closets and specifies requirements for materials, construction, performance, testing, and markings.

1.2
Products covered by this Standard include bidet sprayers and other retrofit personal hygiene devices intended
(a) for water closets and water closet seats; and
(b) to be used with hot and cold water or cold water only.

1.3
The provisions of this Standard are not intended to prevent the use of alternative materials or methods of construction, provided such alternatives meet the intent and requirements of this Standard.

1.4
In this Standard, "shall" is used to express a requirement, i.e., a provision that the user is obliged to satisfy in order to comply with the standard; "should" is used to express a recommendation or that which is advised but not required; and "may" is used to express an option or that which is permissible within the limits of the Standard.

Notes accompanying clauses do not include requirements or alternative requirements; the purpose of a note accompanying a clause is to separate from the text explanatory or informative material.

Notes to tables and figures are considered part of the table or figure and may be written as requirements.

Annexes are designated normative (mandatory) or informative (non-mandatory) to define their application.

1.5
SI units are the units of record in Canada. In this Standard, the inch/pound units are shown in parentheses.

The values stated in each measurement system are equivalent in application; however, each system is to be used independently. Combining values from the two measurement systems may result in non-conformance with this Standard.

All references to gallons are to U.S. gallons.

2 Reference publications
This Standard refers to the following publications, and where such reference is made, it shall be to the edition listed below, including all amendments published thereto.

ASME International/CSA Group
A112.19.2-2013/CSA B45.1-13
Ceramic plumbing fixtures

A112.19.3-2008/CSA B45.4-08 (R2013)
Stainless steel plumbing fixtures

ASSE International
1001-2008
Performance Requirements for Atmospheric Type Vacuum Breakers

CSA Group
B64 Series-11
Backflow preventers and vacuum breakers

B64.1.1-11
Atmospheric vacuum breakers (AVB)

C22.2 No. 64-10
Household cooking and liquid heating appliances

C22.2 No. 68-09 (R2014)
Motor-operated appliances (household and commercial)

CSA Group/IAPMO (International Association of Plumbing and Mechanical Officials)
CSA B45.5-11/IAPMO Z124-2011
Plastic plumbing fixtures

IAPMO (International Association of Plumbing and Mechanical Officials)
Z124.5-2013
Plastic toilet seats

UL (Underwriters Laboratories)
1431-2011
Personal Hygiene and Health Care Appliances

3 Definitions

The following definitions shall apply in this Standard:

Bidet sprayer — a component of a personal hygiene device intended for genital and perineal cleanliness, and intended for installation in water closets and water closet seats.
Note: *In this Standard, bidet sprayers are referred to as "sprayers".*

4 General requirements

4.1 Water closets

Water closets shall comply with ASME A112.19.2/CSA B45.1, ASME A112.19.3/CSA B45.4, or CSA B45.5/IAPMO Z124, as applicable.

4.2 Backflow prevention

4.2.1

Personal hygiene devices intended for connection to the potable water supply shall be equipped with a backflow prevention device.

4.2.2
When used, atmospheric vacuum breakers shall
(a) comply with Clause 5.5.1; and
(b) be installed with the
    (i) critical level located not less than 25 mm (1 in) above the flood level rim; or
    (ii) lowest point located not less than 25 mm (1 in) above the flood level rim, when the critical level is not marked.

4.3 Electrical components
Personal hygiene devices with electrical features or components shall comply with UL 1431, CSA C22.2 No. 68, or CSA C22.2 No. 64.

4.4 Plastic toilet seats
Plastic toilet seats shall comply with IAPMO/ANSI Z124.5.

4.5 Bidet sprayers
Bidet sprayers shall be
(a) fully retractable and not subject to contamination in the retracted position, (i.e., be completely removed from the liquid and solid waste path);
(b) self-cleaning, (i.e., have a means to rinse the bidet sprayer with water); and
(c) concealed when not in use to prevent soiling by the user.

4.6 Source of water
The water from the water closet tank shall not be used as a source of water for the bidet sprayer.

4.7 Automatic seat cover dispensers
Automatic seat cover dispensers shall be life cycle tested in accordance with Clause 5.6.

4.8 Temperature safety device
Personal hygiene devices shall be equipped with a safety device to shut off the flow of water when the temperature reaches 48 °C (118°F).

5 Performance requirements and test procedures

5.1 Order of tests
The tests shall be conducted in the order in which they appear in this Standard.

5.2 Bidet spray pressure tests

5.2.1 Flowing pressure test

5.2.1.1 Test procedure
The flowing pressure test shall be conducted as follows:
(a) Connect the specimen to a water supply.
(b) Increase the flowing pressure to 860 kPa (125 psi), measured at the specimen inlet.
(c) Allow the water flow through the specimen for 5 min.
(d) Inspect for leakage and structural damage.

5.2.1.2 Performance requirements
There shall be no leakage. Flow from the bidet sprayer shall be as intended by the manufacturer.

5.2.2 Static pressure test

5.2.2.1 Test procedure

The static pressure test shall be conducted as follows:
(a) Set the specimen in the off position (fully closed).
(b) Increase the static water pressure to 1720 kPa (250 psi).
(c) Maintain the pressure for 5 min.

5.2.2.2 Performance requirements

There shall be no leakage or structural damage.

5.3 Temperature tests

5.3.1 Normal operating temperature test

5.3.1.1 Test procedure

The normal operating temperature test shall be conducted as follows:
(a) Set the inlet flowing pressure at 345 ± 35 kPa (50 ± 5 psi).
(b) Set the inlet temperature at 18 ± 3 °C (65 ± 5°F).
(c) Operate the specimen at its maximum temperature setting for 5 min.
(d) Measure the temperature at the outlet.

5.3.1.2 Performance requirement

The water temperature at the outlet shall not exceed 43 °C (110°F).

5.3.2 Maximum shutoff temperature for safety devices

5.3.2.1 Test procedure

The maximum shutoff temperature test shall be conducted as follows:
(a) Supply water to the specimen at an initial temperature of 41 +0/–6 °C (105 +0/–10°F).
(b) Set the inlet flowing pressure at 345 ± 35 kPa (50 ± 5 psi) pressure.
(c) Activate the specimen and slowly raise the temperature to 48 °C (118°F).
(d) Increase the water temperature no faster than 0.5 °C (1°F) every 5 s.
(e) Record the time to shut off the flow of water when the temperature reaches 48 °C (118°F).
(f) Repeat this test following the bidet sprayer cycle test.

5.3.2.2 Performance requirements

The water flow through the specimen shall shut off within 5 s of the bidet spray discharge water temperature reaching 48 °C (118°F). Water may continue to flow from the bidet sprayer discharge as long as the temperature remains below 48 °C (118°F) and the sprayer is in the process of returning to its off position/state. The specimen shall be considered to have complied with the requirements of this Clause if water ceases to flow prior to reaching a temperature of 48 °C (118°F).

5.4 Bidet sprayer life cycle test

5.4.1 Test procedure

The life cycle test shall be conducted as follows:
(a) Set the inlet flowing pressure at 345 ± 35 kPa (50 ± 5 psi).
(b) Set the device to its maximum water temperature setting.
(c) Operate the specimen 75,000 times:
    (i) At each cycle, the bidet sprayer shall fully extend and then fully retract.
    (ii) For specimens with multiple bidet sprayers, the anterior (front) sprayer shall be tested for 50,000 cycles and the posterior (rear) sprayer shall be tested for 25,000 cycles.

5.4.2 Performance requirements
At the end of the life cycle test, the specimen shall continue to function at the operating pressure as it did before the test. In addition, there shall be no leakage, and the flow from the bidet sprayer shall be as intended by the manufacturer.

5.5 Atmospheric vacuum breaker test

5.5.1 Test procedure
Vacuum breakers shall be tested for back siphonage in accordance with ASSE 1001 or CSA B64.1.1.

5.5.2 Performance requirements
Water in the sight tube shall not rise more than 13 mm (0.5 in).

5.6 Seat cover dispenser test

5.6.1 Test procedure
The seat cover dispenser shall be operated for 5,000 cycles. Each cycle shall consist of dispensing one seat cover.

5.6.2 Performance requirements
Failure to dispense the seat cover in 100 or more of the 5,000 cycles shall be cause for rejection. Continuous feed dispensers shall render previously dispensed seat covers unusable.

5.7 Bidet sprayer self-cleaning test

5.7.1 Test procedure
The self-cleaning test shall be conducted as follows:
(a) Operate the bidet sprayer enough cycles to ensure that it is purged of air and filled with water at normal operating pressure and temperature.
(b) Extend the bidet sprayer and dry it thoroughly.
(c) Use a water-soluble marker of a contrasting colour to draw lines on the bidet sprayer as follows:
    (i) Draw three rings around the bidet sprayer, one in the upper third of its length, one in the middle third, and one in the lower third.
    (ii) Draw a fourth line longitudinally, along the top of the bidet sprayer from one end to the other.
(d) Release the bidet sprayer and allow it to retract into its off position.
(e) The bidet sprayer self-cleaning function shall be actuated two times.
(f) Inspect and record any lines remaining.

5.7.2 Performance requirements
All of the four lines shall be washed off the bidet sprayer. Any ink lines remaining on the bidet sprayer, shall be considered a failure.

6 Markings and packaging

6.1
Personal hygiene devices complying with this Standard shall be marked with the manufacturer's name or trademark and the model number. Alternatively, the model number may be marked on the packaging.

6.2
Markings shall be permanent, legible, and visible after installation.

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