



**Summary of Substantive Changes
between the 2015 (R2020) and 2021 edition of
ASME A112.19.4.2/CSA B45.16 “Personal hygiene devices for water closets”**

Presented to the IAPMO Standards Review Committee on February 7, 2022

General: The changes to this standard should not have an impact on currently listed products. The significant changes are:

- Added requirements for airgaps, air space vacuum breakers, and flexible connectors (see Sections 4.2, and 4.9)
- Expanded the scope to include airgaps, and air space vacuum breakers to allowable types of backflow prevention (see Sections 5.5.2, and 5.5.3)
- Added a seat securement test (see Section 5.8, Figure 1, and 2)

Section 2, Reference publications: The following standards were added, revised, or removed as follows:

ASME International

[A112.1.3-2000](#)

[Air gap fittings for use with plumbing fixtures, appliances, and appurtenances](#)

[A112.18.6-2017/CSA B125.6-17](#)

[Flexible water connectors](#)

~~A112.19.3-2008~~[2017](#)/CSA B45.4-~~08(R2013)~~[17](#)

Stainless steel plumbing fixtures

ASSE International

~~1001-2008~~[2017](#)

Performance Requirements for Atmospheric Type Vacuum Breakers

CSA Group

~~B64.1.1-11~~ [\(R2016\)](#)

Atmospheric vacuum breakers (AVB)

[B64.1.4-11 \(R2016\)](#)

[Vacuum breakers, air space type \(ASVB\)](#)

[C22.2 No. 0.15:15 \(R2020\)](#)

[Adhesive labels](#)

~~C22.2 No. 64-10~~[19](#)

Household cooking and liquid heating appliances



C22.2 No. 68-~~09 (R2014)~~ 18

Motor-operated appliances (household and commercial)

CSA Group/IAPMO (International Association of Plumbing and Mechanical Officials)

CSA B45.5-~~1117~~/IAPMO Z124-~~2011~~2017

Plastic plumbing fixtures

IAPMO (International Association of Plumbing and Mechanical Officials)

Z124.5-2013 (R2018)

Plastic toilet seats

UL (Underwriters Laboratories)

969 edition 5

Standard for marking and labelling systems

Section 4, General Requirements: Added requirements for airgaps, air space vacuum breakers, and flexible connectors as follows:

4.2 Backflow prevention

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4.2.3

When used, air gap fittings or vacuum breakers, air space type (ASVB) shall

a) comply with Clause 5.5.2 or 5.5.3, respectively; 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.

4.9 Flexible water connectors

Flexible water connectors intended for use under continuous pressure shall comply with ASME

A112.18.6/CSA B125.6.

Section 5, Performance requirements and test procedures: Expanded the scope to include airgaps, and air space vacuum breakers to allowable types of backflow prevention and added a seat securement test as follows:

5.5 Backflow prevention test

5.5.1 Atmospheric vacuum breaker

5.5.1.1 Test procedure

Atmospheric vacuum breakers shall be tested for back siphonage in accordance with ASSE 1001 or CSA B64.1.1.

5.5.2 5.5.1.2 Performance requirements

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

5.5.2 Air gap fittings

5.5.2.1 Test procedure

Air gap fittings shall be tested for back siphonage in accordance with ASME A112.1.3.

5.5.2.2 Performance requirements



The water shall not rise in the sight glass.

5.5.3 Vacuum breakers — Air space type (ASVB)

5.5.3.1 Test procedure

Vacuum breakers, air space type (ASVB) shall be tested for back siphonage in accordance with CSA B64.1.4.

5.5.3.2 Performance requirements

The water shall not rise in the sight glass.

5.8 Seat securement test

5.8.1 Test apparatus

The test apparatus for the seat securement test shall

a) consist of

- i) a test stand in which the specimen can be installed simulating the manner specified by the manufacturer in the instructions. The test stand shall have a flat area to allow for mounting the specimen securely;
- ii) a compatible water closet (bowl only); or
- iii) when integrated, an integral water closet and personal hygiene device (i.e., no separate test apparatus is necessary); and

b) include the following

- i) a strap or similar instrument (i.e., band, belt, etc.) to wrap around the front edge of the toilet seat; and
- ii) a push-pull force gauge capable of measuring at least 178 N (40 lbf).

5.8.2 Test procedure

The seat securement test shall be conducted as follows:

- a) Mount the specimen on the test apparatus specified in Clause 5.8.1. Follow the manufacturer's installation instructions when assembly is required.
- b) Maintain the seat in the horizontal (closed) position and the lid upward or detached if functionality permits.
- c) Place a strap or similar instrument around the front edge of the seat and secure it around the front-most portion of the seat so it does not move out of place.
- d) Attach the pull end of the push-pull gauge to the strap.
- e) Apply a lateral pull load of 90 N (20 lbf) perpendicularly to the length of the seat. See Figure 1.
- f) Maintain the load for 5 s and release it.
- g) Repeat the steps in Items e) and f) three times.
- h) Raise and lower the seat and lid cover, if attached, three times gradually, within 10 s.
- i) Inspect for any damage or impairment of seat movement while raising and lowering the seat and lid cover.
- j) Raise the seat and lid cover to its maximum allowed position. The lid may be detached if functionality permits.
- k) Apply a perpendicular load of 45 N (10 lbf) to the front-most portion of the seat at its center. For non-integrated specimens, there shall be no vertical support as part of the test stand. See Figure 2.
- l) Maintain the load for 5 s and release it.
- m) Repeat the steps in Items k) and l) three times.
- n) Raise and lower the seat and lid cover three times gradually, within 10 s and inspect for any visual damage or impairment of seat movement while raising and lowering.



5.8.3 Performance requirements

There shall be no visible signs of cracking and the seat movement shall not be impaired (i.e., it shall be possible to lift the seat and return it to the closed position).

Figure 1 was added

Figure 2 was added