



**Summary of Substantive Changes
between the 2008 and the 2017 edition of
ASSE 1001, Performance Requirements for
Atmospheric Type Vacuum Breakers**

Presented to the IAPMO Standards Review Committee on August 7, 2017

General: The changes to this standard might have an impact on currently listed products. The significant changes are:

- Classified atmospheric type vacuum breakers into three categories, Pipe-applied, Flushometer-applied, and Integrally-applied, and added definitions for the three categories (see Sections 1.2 and 5.0).
- Limited the application of the extreme temperature and pressure range test to Pipe-applied and Flushometer-applied devices, Integrally-applied devices are not included (See sections 3.1).
- Limited the examination of the air inlet shield to Pipe-applied and Flushometer-applied devices and clarified that the air flow for Integrally-applied devices is addressed in Section 3.4 (See sections 3.3).
- Replaced former Figures 3A and 3B with current Figure 7, added additional text to describe the test procedure, and specified a minimum requirement of 10 s flow through for the vacuum tank capacity (see Section 3.5)
- Added a new hydrostatic test (see Section 3.7).
- Revised the marking requirements for Flushometer-applied and Integrally-applied devices (see Section 4.3)
- Limited the requirement to include installation instructions to Pipe-applied and Flushometer-applied devices (see Section 4.4)

Section 1.2, Scope: Included three classifications of atmospheric type vacuum breakers that are covered by the scope of this standard as follows:

1.2.1 Description

...

The atmospheric type design shall consist of:

- a. A check valve member ~~and~~;*
- b. An air ~~vent~~inlet valve that is normally closed when the devicecheck valve member is pressurizedopen, and normally open when the inlet pressurecheck valve member is normally closed.*

The atmospheric type design can be further classified into three categories, depending on use:

- 1. Pipe-applied*
- 2. Flushometer-applied, or*
- 3. Integrally-applied*

Devices shall include an air inlet shield.

Section 1.4, Referenced Standards: The following referenced standards were added:



[ASSE 1037-2015 / ASME A112.1037-2015 / CSA B125.37-15 - Performance Requirements for Pressurized Flushing Devices](#)

[ISO 1219-1:2012 – Fluid power systems and components – Graphical symbols and circuit diagrams – Part 1: Graphical symbols for conventional use and data-processing application](#)

Section 3.1, Deterioration at Extremes of Manufacturer's Temperature and Pressure Range Test: Limited the application of the extreme temperature and pressure range test to Pipe-applied and Flushometer-applied devices, Integrally-applied devices are not included as follows:

3.1.1 Purpose

The purpose of this test is to ensure the device continues to function after exposure to manufacturer's extremes of temperature and pressure [for pipe-applied and flushometer-applied devices](#).

Section 3.2, Allowable Pressure Loss at Rated Flow Test: Clarified the flow rate requirement for NPT sizes between those specified in Table 2 as follows:

3.2.3 Criteria

[a. Pressure loss across the device greater than 10.0 psi \(68.9 kPa\) at flows stated in Table 2 shall result in a rejection of the device.](#)

[b. If the inner diameter of the smallest connection size is not listed in Table 2, perform a linear interpolation between the two nearest listed sizes to find the required minimum water flow. The criteria per 3.2.3.a shall apply.](#)

Section 3.3, Examination of Air Inlet Shield: Limited the examination of the air inlet shield to Pipe-applied and Flushometer-applied devices and clarified that the air flow for Integrally-applied devices is addressed in Section 3.4 as follows:

3.3.1 Purpose

The purpose of this test is to ascertain compliance of the air inlet shield [for devices other than pipe-applied and flushometer-applied integrally-applied devices](#). [Those Integrally-applied devices shall be within the overall enclosure of the assembly with sufficient ventilation to pass section 3.4.](#)

Section 3.5, Backsiphonage Test: Replaced former Figures 3A and 3B with current Figure 7, added additional text to describe the test procedure and specified a minimum requirement of 10 s flow through for the vacuum tank capacity as follows.

3.5.2 Procedure

...

The device shall be installed in its normal position. The check(s) member(s) shall be fouled with the proper size wire in the proper position or by defacement depending on the type of check member(s) and the inlet of the device connected to a vacuum line (see [Figures 3A and 3B 7](#)).

[Inlet and outlet locations may vary, relative to Figure 7. Vacuum is at the inlet of the device. Dimension H shall be 1" for deck mounted and equipment mounted devices, and 6" for all other devices measured from the critical level of the device to the fluid level in the receptacle. The critical level shall be either the critical level mark, if present, or the bottom of the device. The vertical tube rising from the receptacle](#)



shall be transparent, 3/4" to 1" (19.0mm to 25.4mm) in diameter, and having graduations of 1/16" (1.6mm). Alternatively to the graduations, a 6" (15.2cm) ruler may be fastened to the tube.

Vacuum tank capacity shall be adequate to provide at least a 10 second flow through the device during the air flow test.

Section 3.7, Hydrostatic Test of the Complete Device: Added a new hydrostatic test as follows:

3.7 Hydrostatic Test of the Complete Device

3.7.1 Purpose

The purpose of this test is to ascertain whether leaks or damage occurs when the device is subjected to 250.0 psi (1724 kPa) or two (2) times the manufacturer's rated working pressure, whichever is greater.

3.7.2 Procedure

Fill the device with water ensuring that all air has been purged from device. Pressurize the device to 250.0 psi (1724 kPa) or two (2) times the manufacturer's maximum rated working pressure, whichever is greater. This pressure shall be maintained for five (5) minutes during which time the device shall be examined for evidence of any leaks.

For deck-mounted and integrally-applied types, allow for an open hydraulic path from the inlet of the assembly to which it is applied, up to the outlet of the device. Seal all vents to atmosphere except the air inlet of the device. Apply pressure to the water inlet and outlet of the assembly.

3.7.3 Criteria

Any leaks shall result in a rejection of the device.

4.3 Markings: Revised the marking requirements for Flushometer-applied and Integrally-applied devices as follows:

4.3.1 Marking of Pipe-applied Devices

~~Each device~~ Pipe-applied devices shall have the following information marked ~~on it~~ where it is visible after the device has been installed:

- a) Manufacturer's name or trademark
- b) Model number of the device
- c) Rated working pressure
- d) Nominal valve size
- e) The direction of water flow through the device
- f) Critical level – optional for all devices, except for devices that are incorporated in an outlet tube furnished by the manufacturer
- g) "Deck Mounted" when tested as deck and equipment mounted per Section 3.5

4.3.2 Marking of Integrally-applied and Flushometer-applied Devices

All other devices subject to the requirements of this standard shall have the following information marked where it is visible after the device has been installed:



- [a\) Manufacturer's name or trademark](#)
- [b\) Model number of the device](#)
- [c\) Critical level – optional for all devices except for devices that are incorporated in an outlet tube furnished by the manufacturer](#)
- [d\) "Deck Mounted" when tested as deck and equipment mounted per Section 3.5](#)

[Integrally-applied devices may contain the markings on the fitting it is installed into.](#)

The markings shall be either cast, etched, stamped or engraved on the body of the device, or on a corrosion and water resistant label securely attached to the device with a corrosion resistant material.

Section 4.4, Installation and Maintenance Instructions: Limited the requirement to include installation instructions to Pipe-applied and Flushometer-applied devices as follows:

4.4.1 Included Items

Installation instructions shall be provided in addition to drawings or schematic sketches that provide for the proper installation of the device. The instructions shall describe or show by drawings the correct installed position.

Installation instructions shall include statements as follows:

- a) The device shall be installed in accordance with the requirements of the local plumbing code.*
- b) The device shall not be installed where the venting of water from the device during its normal functioning causes damage.*
- c) The device shall be installed ~~downstream of the last valve~~ such that it is not subjected to backpressure.*
- d) The following statement shall be included in the installation instructions: "This atmospheric vacuum breaker shall not be subjected to continuous pressure for more than twelve (12) hours."*

[4.4.2 Section 4.4.1 shall not apply to integrally-applied devices.](#)

Section 5.0, Definitions: Added definitions for the different classifications of atmospheric type vacuum breakers as follows:

Deck-Mounted/Equipment-Mounted

A ~~pipe-applied~~ atmospheric vacuum breaker that allows a maximum water rise of 1/2 inch (12.7 mm) in its discharge piping when the inlet of the device is subjected to a vacuum of less than or equal to 25 inches (85 kPa) of mercury.

[Flushometer-applied vacuum breaker](#)

[The inlet of this vacuum breaker is coupled to the outlet of a flushometer as defined by ASSE 1037 / ASME A112.1037 / CSA B125.37 and the outlet is normally coupled to a fixture.](#)

[Integrally-applied vacuum breaker](#)

[This vacuum breaker is installed within a fixture or fitting and is installed by the manufacturer as a sub-assembly. These devices are not normally serviced by a plumber.](#)

Pipe-applied vacuum breaker

This vacuum breaker is coupled to a pipe at its inlet and outlet. The standard design is comprised of an inlet at its base and an outlet 90-degrees from the inlet at the vacuum breaker's side wall.

Former Figures 3A and 3B were replaced with new Figure 7 as follows:

Figure 3A

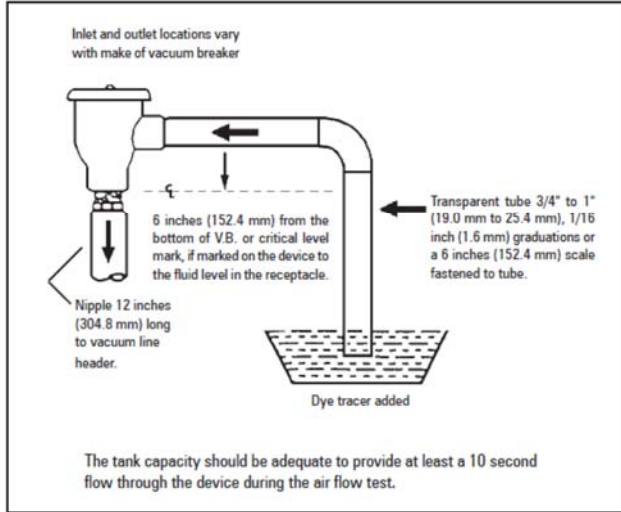


Figure 3B
(Deck Mounted/Equipment Mounted Devices only)

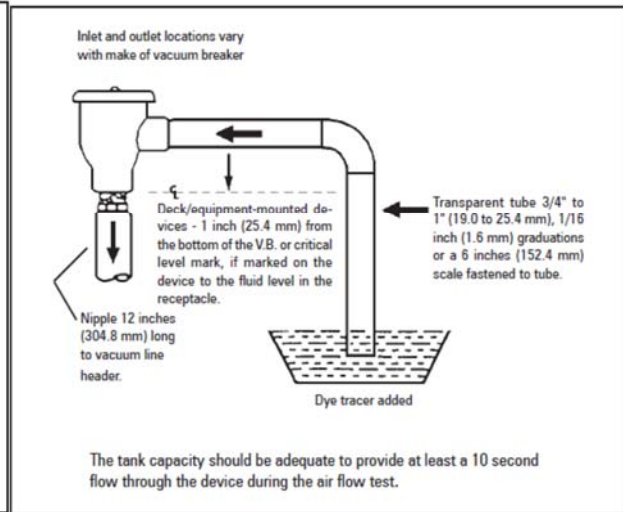


Figure 7

