



**Summary of Substantive Changes
between the 2003 and the 2017 edition of
ASSE 1022, Backflow Preventer for Beverage Dispensing Equipment**

Presented to the IAPMO Standards Review Committee on November 13, 2017

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

- Removed the allowance to submit three new devices for full testing if one device fails (see Section 2.0).
- Changed the minimum working temperature and pressure to, the greater of, either manufacturer's maximum rating or 200 psi at 130 °F (See Section 3.5).
- Revised the atmospheric port-opening test set-up with the addition of new Figure 5, and clarified the test procedure (See Section 3.8).
- Added a 0.2% maximum lead requirement for solder and fluxes and included an alternative allowance for certification to NSF 18 for polymers and elastomers in contact with potable water (see Section 4.1)
- Added requirements for interior parts and springs in contact with water (see Section 4.2).
- Removed the allowance to use a permanent label in place of cast, etched, stamped, or engraved markings for the markings (see Section 4.3)

Section 2.0, Test Specimens: Removed the allowance to submit three new devices for full testing if one device fails as follows.

2.4. Rejection

Failure of one (1) device shall result in a rejection of that type and/or size. ~~The manufacturer shall correct the fault and submit three (3) new devices for full testing.~~

Section 3.3, Atmospheric Port-Leakage: Corrected the reference to gauge #1 as follows:

3.3.1 Purpose

The purpose of this test is to determine that under the specified working conditions there is no leakage or discharge from the atmospheric port.

3.3.2 Procedure

The device shall be installed in accordance with Figure 3 with Shut-off Valves 1 and 2 open.. A pressure of 10.0 psi ± 1.0 psi (~~69.0~~68.9 kPa ± 6.9 kPa) shall be maintained at ~~gauge #2~~ gauge #1 for a period of five (5) minutes.

3.3.3 Repeat section 3.3.2 with the pressure at ~~gauge #2~~ gauge #1 at 200.0 psi ± 1.0 psi (1379.~~0~~ kPa ± 6.9 kPa).



Section 3.5, Deterioration at Extremes of Manufacturer's rated Temperature and Pressure Ranges: Changed the minimum working temperature and pressure to the greater of either manufacturer's maximum rating or 200 psi at 130 °F.

3.5.2. Procedure

Water at $130.0\text{ °F} \pm 4.0\text{ °F}$ ($54.4\text{ °C} \pm 2.3\text{ °C}$) or the manufacturer's maximum rated working temperature, whichever is greater, and pressure at 200.0 psi \pm 5.0 psi (137 \pm 34.5 kPa), or the manufacturer's maximum rated working pressure, whichever is greater, shall be circulated through the device at the rated flow specified in Table 1 for a total of 80 hours \pm 0.25 hours. On completion of this test, water at $40.0\text{ °F} \pm 4.0\text{ °F}$ ($4.44\text{ °C} \pm 2.3\text{ °C}$) and pressure at 200.0 psi (137 kPa) or the manufacturer's maximum rated working pressure, whichever is greater, shall be circulated through the device at the rated flow for one (1) hour.

Section 3.6., Check Valve Sealing Pressure: Clarified the check valve test procedures as follows:

3.6.2.1 Upstream Check Valve

With the upstream check valve left in its normal operation configuration and all other check valves held open or removed, install the device in its normal operating position per Figure 1. Replace ~~gauge #2~~ Gauge #1 with a water column or equivalent gauge. Open shut-off valves #1 and #2. Close shut-off valve #3. Purge the system of air. Slowly raise the pressure on the supply side to fill the water column until there is flow from the outlet of the device. Close shut-off valve #1. After five (5) minutes, examine the outlet for leakage. Record the pressure in the water column / pressure gauge.

3.6.2.2 Downstream Check Valve

With the downstream check valve left in its normal operation configuration and all other check valves held open or removed, and with the vent port blocked, install the device in its normal operating position per Figure 1. Replace Gauge #1 with a water column or equivalent gauge. Open shut-off valves #1 and #2. Close shut-off valve #3. ~~With the upstream check valve held open or removed the vent port blocked closed, purge the system of air. Slowly raise the primary supply pressure to 14.0 inches (355.6 mm) water. Hold for five (5) minutes. Purge the system of air. Slowly raise the pressure on the supply side to fill the water column until there is flow from the outlet of the device. Close Shut-off Valve #1. After five (5) minutes, examine the outlet for leakage. Record the pressure in the water column / pressure gauge.~~

Section 3.8, Atmospheric Port-Opening Pressure: Revised the atmospheric port-opening test set-up with the addition of new Figure 5, and clarified the test procedure as follows

3.8.2. Procedure

Install the device ~~per as shown in Figure 1~~ Figure 5 with the second check removed or held open and with Shut-off Valves #1 and #2 and #3 closed. The atmospheric port shall be pointing up for this test and be filled with water. ~~Install a vent line per the manufacturer's instructions.~~ This test is performed with air to simulate a backflow of CO₂ gas.



With air, raise the inlet pressure of the device through [Shut-off Valve #1](#) until the outlet pressure reaches 10.0 psi \pm 1.0 psi (68.9 kPa \pm 6.9 kPa). Slowly [open Shut-off Valve #2](#) and increase the backpressure through [Shut-off Valve #2](#) ~~Valve #3~~ until air discharge is observed from the atmospheric port [in the form of bubbles](#) and record the inlet and outlet pressures.

Repeat the test with the inlet pressure at 75.0 psi (517.1 kPa) and then at 150.0 psi (1034.2 kPa) or the manufacturer's [maximum](#) rated [working](#) pressure, whichever is greater.

Section 4.1, Materials and Toxicity: Added a 0.2% maximum lead requirement for solder and fluxes and included an alternative allowance for certification of the device to NSF 18 for polymers and elastomers in contact with potable water as follows:

4.1. Materials and Toxicity

[Solder and fluxes containing lead in excess of 0.2% shall not be used in contact with potable water.](#)

Polymers and elastomers that come in contact with potable water shall comply with one of the following:

- a) U.S. Code of Federal Regulations (CFR), Title 21, Section 177; or.
- b) NSF Standard 61.
- ~~c) Certified as non-toxic material by an independent, approved testing agency.~~

[Alternately the entire device may be certified to NSF Standard 18.](#)

Section 4.2, Design and Construction: Added requirements for interior parts and springs in contact with water as follows:

4.2.1 Corrosion of Interior Parts

[All metal parts \(except springs\) in contact with the water flowing through the device shall have a corrosion resistance at least equal to a copper alloy of not less than 58% copper.](#)

[4.2.1.a Copper and copper alloys shall not be used downstream of the upstream check sealing area, inclusive of the seal.](#)

4.2.3 Springs

[Springs in contact with the water flowing through the device shall have a corrosion resistance at least equal to chrome nickel stainless steel, Series 300.](#)

Section 4.3, Markings: Removed the allowance to use a permanent label in place of cast, etched, stamped, or engraved markings for the markings as follows

4.3.2 Marking shall be either cast, etched, stamped, or engraved on the body of the device or on a corrosion-resistant metal plate securely fastened to the device. ~~A permanent label listed in the latest edition of CSA Publication DIR.008 is acceptable for this purpose.~~



The following figure was added:

Figure 5

