



**Summary of Substantive Changes
between the 2005 and the 2020 edition of
ASSE 1014 “Backflow Prevention Devices for Hand-held Showers”**

Presented to the IAPMO Standards Review Committee on May 18, 2020

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

- Clarified the scope of products covered by this standard and added a requirement for devices to have two independently acting check valves in series or a check valve in series with a vacuum breaker feature (see Section 1.2.1)
- Revised the deterioration at extremes of temperature and pressure test, the life cycle test and the continuous capacity test (see Sections 3.1, 3.2, and 3.3)
- Added additional requirements for installation instructions (see Section 4.2)
- Included an allowance for markings to be applied as a permanent label in accordance with UL 969 (see Section 4.3)

Section 1.2.1, Description: Clarified the scope of products covered by this standard and added a requirement for devices to have two independently acting check valves in series or a check valve in series with a vacuum breaker feature as follows:

1.2.1 Description

These devices provide backflow protection against backsiphonage and backpressure in handheld showers. These are separate devices or are integral with ~~handheld showers, wall-mounted or deck-mounted~~ tub fillers, flexible hoses, or components that are attached to a shower ~~arms~~ system. The device shall include two independently acting check valves in series or a check valve in series with a vacuum breaker feature.

Section 1.2.5 Connections: Added a requirement for connections to comply with ASME A112.18.1 / CSA B125.1.

1.2.5 Connections

Connections for non-integral devices shall conform to ASME A112.18.1 / CSA B125.1.

Section 1.2.6 Two Check Valves: Added a requirement for devices with two check valves to comply with ASME A112.18.3 as follows:

1.2.6 Two Check Valves

Devices with two check valves in series shall comply with ASME A112.18.3 as a fitting with internal backflow prevention device.

Section 1.3, Reference Documents: Reference standards were added, deleted or updated as follows:

1.3 Reference Documents

Referenced industry standards shall be to the revision stated below.



- ASME A112.18.1-2018 / CSA B125.1-18, Plumbing ~~Fixture Supply~~ Fittings
- [ASME A112.18.3-2002 \(R2017\), Performance Requirements for Backflow Devices and Systems in Plumbing Fixture Fittings](#)
- [UL 969-2017, Marking and Labeling Systems](#)

Section 2.0, Test Specimens and Test Laboratory: Revised the requirements for test specimen sampling as follows:

2.1 Samples Submitted

~~Three (3) devices of each type or model and size shall be submitted by the manufacturer.~~

2.0 Test Specimens and Test Laboratory

~~2.2 Samples Tested~~ ~~The testing agency shall select one (1) of each type or model and size for the full test. Sample plan shall be in accordance with the testing laboratory or certification body.~~ Tests shall be performed in the order listed on one (1) ~~device~~ sample of each ~~size~~ model submitted.

2.3 Drawings

~~Assembly and installation drawings and other data which are needed to enable a testing agency to determine compliance with this standard shall accompany devices when submitted for examination and performance tests under this standard.~~

2.4 Rejection

~~Failure of one (1) device shall result in a rejection of that type or model and size.~~

Section 3.0, Performance Requirements and Compliance Testing: Revised the Deterioration at Extremes of Temperature and Pressure Test, the Life Cycle Test and the Continuous Capacity test as follows:

Section 3.1 Deterioration at Extremes of Temperature and Pressure Test: Changed the final step of this test from, pressurizing for 5 min with 120.0 °F water at 125.0 psi, to application of the pressure and temperature test in ASME A112.18.1/CSA B125.1 as follows:

3.1 Deterioration at Extremes of Temperature and Pressure Test

3.1.2 Procedure

- ~~Connect a shut-off valve to the outlet of the device per Figure 1. Fully open valves V1 and V2.~~
- Flow water through the device at a pressure of 125.0 psi \pm 5.0 psi (861.9 kPa \pm 34.5 kPa) as measured at P1, or the manufacturer's maximum rated pressure, whichever is greater, for the duration of the test.
- Adjust the inlet water temperature to 120.0 °F \pm 2.0 °F (48.9 °C \pm 1.1 °C) as measured at T1, and flow for thirty (30) minutes.
- Increase the water temperature to 150 °F \pm 2 °F (65.6 °C \pm 1.1 °C), and flow for one (1) minute. ~~Decrease the water temperature to 120.0 °F \pm 2.0 °F (48.9 °C \pm 1.1 °C), and within one (1) minute close the shut-off valve on the outlet of the device. Maintain a pressure on the inlet of the device of 125.0 psi \pm 5.0 psi (861.9 kPa \pm 34.5 kPa), or the manufacturer's maximum rated working pressure, whichever is greater, for five (5) minutes.~~
- Perform the Pressure and Temperature Test for Static and Dynamic Seals in ASME A112.18.1 / CSA B125.1.



Section 3.2, Life Cycle Test: Added an alternative to the life cycle test, increased the flow rate from 1.9 to 2.5 gpm and clarified the procedure for testing devices integral to handheld shower assemblies as follows:

3.2 Life Cycle Test

3.2.1 Purpose

The purpose of this test is to determine if there is any deterioration in performance upon completion of the cycles of operation noted below. As an alternative, the device shall show compliance to the durability test of ASME A112.18.3 in lieu of Section 3.2.

3.2.2 Procedure

- a. ~~Measured at the outlet of Connect~~ the device per Figure 1. For non-integral devices, establish a maximum flow of 1.9 GPM \pm 0.1 GPM (7.2 L/m \pm 0.4 L/m) 2.5 GPM (9.46 L/min) at a flowing pressure of 50.0 psi \pm 5.0 psi (344.8 kPa \pm 34.5 kPa) by throttling valve V2. For devices integral to a handheld shower assembly, set the flowing pressure at P1 to 50.0 psi \pm 5.0 psi (344.8 kPa \pm 34.5 kPa).
- b. Cycle the device at a maximum rate of 1500 cycles per hour. A cycle is defined as an alternating pressure from 0 psi to 50.0 psi \pm 5.0 psi to 0 psi (0 kPa to 344.8 kPa \pm 34.5 kPa to 0 kPa). ~~For E~~every 1,000 cycles, alternate the incoming water temperature from ambient to 115 °F \pm 5 °F (46.1 °C \pm 3.0 °C) to ambient.
- c. Subject the device to 15,000 cycles.
- d. Upon completion of the 15,000 cycles, for non-integral devices, flow ambient water at 1.9 GPM \pm 0.1 GPM (7.2 L/m \pm 0.4 L/m) at a pressure of 125.0 psi \pm 5.0 psi (861.9 kPa \pm 34.5 kPa) for one 1 minute. For devices integral to a handheld shower assembly, set the flowing pressure at P1 to 125.0 psi \pm 5.0 psi (861.9 kPa \pm 34.5 kPa) for 1 minute.
- e. Close the shut-off valve on the outlet of the device, and maintain a static pressure on the inlet of the device of 125.0 psi \pm 5.0 psi (861.9 kPa \pm 34.5 kPa) for five (5) minutes.

3.2.3 Criteria

Any indication of external leakage, after the test when the gauge pressure of 125.0 psi (861.9 kPa) is applied with the shut-off valve in a closed position, or non-compliance with the remaining sections of this standard shall result in a rejection of the device.

Section 3.3, Continuous Capacity: Changed the section title from Backpressure Test to Continuous Capacity as follows:

3.3 ~~Backpressure Test~~ Continuous Capacity

Section 3.3.2, Procedure: Added allowable tolerances and changed the height of the discharge end of the shower hose from 60 in to its maximum height as follows:

3.3.2 Procedure

- a. Install the device in accordance with Figure ~~12~~ with a 60 \pm 2 inch (1524.0 \pm 50.8 mm) hand-held shower hose attached to the outlet of the device.
- b. Place a sheet of paper below the inlet of the device.
- c. Seal the air ports.
- d. Raise the discharge end of the shower hose to 6 \pm 0.5 inch (152.4 \pm 12.7 mm) above the centerline of the device.
- e. Fill the shower hose with colored water. Hold for five (5) minutes, and observe for leakage.
- f. Slowly raise the discharge end of the shower hose to ~~60 inches (1524. mm)~~ its maximum height above the centerline of the device. Hold for five (5) minutes, and observe for leakage.



Section 4.2, Installation Instructions: Added requirements for installation instructions to include the inlet and outlet connection sizes, maximum working pressure, minimum and maximum flow rate and minimum stated flow as follows:

4.2 Installation Instructions

Instructions for installation shall be packaged with the device. Instructions for the maintenance of field repairable devices and testing for field testable devices shall be packaged with the device.

The installation instructions shall include the following information:

- a. Inlet and outlet connection sizes.
- b. Manufacturer's maximum working pressure.
- c. Manufacturer's stated minimum and maximum flow rate.
- d. Manufacturer's minimum stated flow

Section 4.3, Markings: Included an allowance for markings to be applied as a permanent label in accordance with UL 969 and removed securely attached brass or stainless-steel plates and as follows:

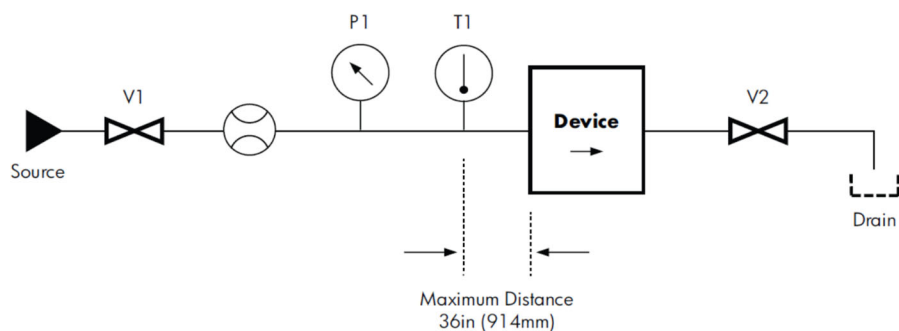
4.3 Markings

4.3.2 The markings shall be either cast, etched, stamped or engraved on the body of the device, or ~~on a brass or stainless steel plate securely attached to the device by a corrosion resistant means~~ labels shall comply with UL 969 for permanence.

Figure 1, Test setup for sections 3.1 and 3.2. Note that for integral devices, V2 is not applicable: A new figure was added as follows:

Figure 1, Test setup for sections 3.1 and 3.2. Note that for integral devices, V2 is not applicable.

Figure 1 – Test setup for sections 3.1 and 3.2. Note that for integral devices, V2 is not applicable.



Former figures 1, 2, and 3 were renumbered and revised as follows:

Figure ~~12~~:

Figure 1

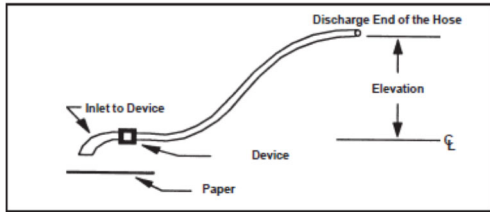


Figure 2

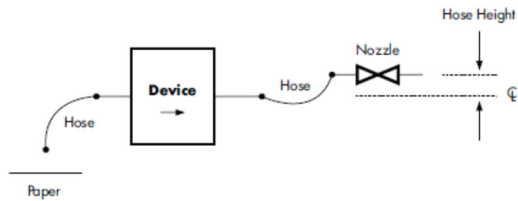


Figure 23

Figure 2

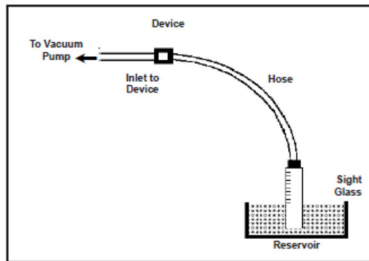


Figure 3

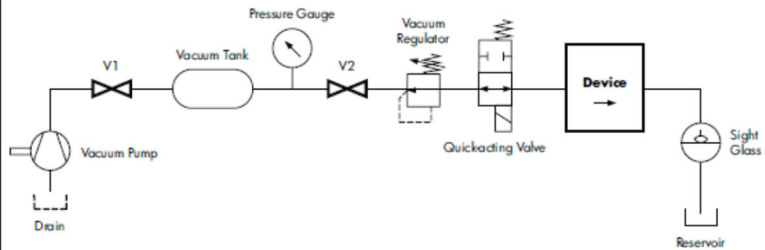


Figure 34

Figure 3

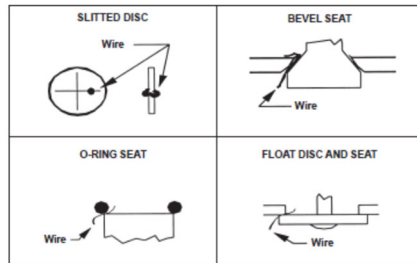


Figure 4

