Summary of Substantive Changes
between the 2018 and the 2022 edition of
ASSE 1087 "Commercial and Food Service Water Treatment Equipment Utilizing Drinking Water"

Presented to the IAPMO Standards Review Committee on November 07, 2022

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

- Revised the requirements for working pressure and temperature (see Sections 1.2.2, and 1.2.3)
- Added a requirement for all connections to conform to local codes and applicable standards (see Section 1.2.5)
- Revised the life cycle test and added Table 2 (see Section 3.3, and Table 2)
- Revised multiple test procedures and performance requirements for accuracy, clarification and increased performance (see Sections 3.4, 3.5, 3.6 and 3.8)
- Added requirement for compliance with NSF 61 and 372 for materials in contact with potable water (see Section 4.1)
- Added a marking requirement for the minimum flow rate at 20 psi, and a requirement for compliance with UL 969 for permanent labeling (see Section 4.2)
- Added a requirement for installation instructions to include literature containing the device minimum flow rate (see Section 4.3)

Section 1.3, Reference Standards: Reference standards were updated as follows:

1.3 Reference Standards

Referenced industry standards shall be the to the revision stated below:

- *ASME A112.1.2-~~2012~~2017, Air Gaps in Plumbing Systems (for Plumbing Fixtures and Water-Connected Receptors)*
- *ASME A112.1.3-~~2000 (R2010)~~2019, Air gap Fittings for use with Plumbing Fixtures, Appliances, and Appurtenances*
- *ASME B1.20.1-~~2013~~2018, Pipe Threads, General Purpose (Inch)*
- *ASME B16.22-~~2013~~2018, Wrought Copper and Copper Alloy Solder Joint Pressure Fittings*
- *ASME B16.51-~~2013~~2018, Copper and Copper Alloy Press-Connect Pressure Fittings*
- *ASSE 1061-~~2015~~2020, Performance Requirements for Push-Fit Fittings*
- *NSF/ANSI 42-~~2017~~2020, Drinking Water Treatment Units - Aesthetic Effects*
- *NSF/ANSI 44-~~2017~~2018, Residential Cation Exchange Water Softeners*
- *NSF/ANSI 53-~~2017~~2020, Water Treatment Product - Health Effects*
- *NSF/ANSI 55-~~2017~~2020, Ultraviolet Microbiological Water Treatment Systems*
- *NSF/ANSI 58-~~2017~~2020, Reverse Osmosis Drinking Water Treatment Systems*
- *NSF/ANSI 60-~~2017~~2020, Drinking Water Treatment Chemicals - Health Effects*
- *NSF/ANSI 61-~~2017~~2020, Drinking Water System Components - Health Effects*
- *NSF/ANSI 62-~~2017~~2020, Drinking Water Distillation Systems*
- *NSF/ANSI 177-~~2014~~2019, Shower Filtration Systems - Aesthetic Effects*

Section 2.0, Test Specimens and Test Laboratory:

2.3 Samples Tested

When a single sample is to be shared amongst different tests, the tests shall be performed in theorder listed in this standard. Requirements in Section 4 ~~may be tested before Section 3~~ must be tested first.

2.4 System Test Plan

When a system uses components, whose performance have been previously evaluated to this standard or other referenced standards per Section 1.3, complete system testing may not be required.

Not all sections of this standard are applicable for ~~a particular~~ every system or component evaluated to this standard.

Section 3.0, Performance Requirements and Compliance Testing:

3.1 Service Flow Capacity

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3.1.2 Procedure

Install the device per Figure 1 and the manufacturer's instructions.

a. *Open water supply flow. Adjust flow to the manufacturer's stated maximum flow rate at 30 ± 5 psi flowing pressure. Begin recording flow rate and pressure differential between P2 and P1. Record incoming flowing water temperature.*
b. *Allow the device to flow for 5 minutes. Collect a minimum of 3 data points over the 5 minute period. Record the average flow rate and average pressure differential.*
c. *Adjust flow such that the pressure differential between P2 and P1 is 15 ± 2 psi (103.4 ± 13.8 kPa).*
d. *Allow the device to flow for 5 minutes. Collect a minimum of 3 data points over the 5 minute period. Record the average flow rate and average pressure differential.*
e. *Calculate the tested service flow coefficients per Equation 1*

3.1.3 Criteria

The tested maximum service flow coefficient shall be greater than, or equal to, the maximum service flow coefficient as ~~derived from the manufacturer's specification sheet~~ specified by the manufacturer.

3.2 Flow Capacity – Point of Entry System

3.2.1 Purpose

Test is conducted to determine the POE system's pressure drop when flowing at the service and maximum flow rates. Ice maker filters, components, and reverse osmosis systems are exempt from Section 3.2.

3.2.2 Procedure

a. *Install the system under test per Figure 1. Ensure that the plumbing connections on the test assembly are of equal size to the inlet and outlet of the system under test.*
b. *Set the ~~influents~~ influent flowing water pressure to 30 ± 5 psi (207 ± 34.5 kPa) and temperature to 60 - 85 °F (15.6 - 29.4 °C).*
c. *Purge the air from the system.*
d. *Increase the flow rate such that the pressure drop across P2 and P1 is 15 ± 1 psi (103 ± 6.9 kPa). Record the flow rate.*
e. *Repeat Section 3.2.2.d at pressure drops of 20 ± 1 psi (138 ± 6.9 kPa) and again at 25 ± 1 psi (172 ± 6.9 kPa).*

3.2 Flow Capacity – Point of Use System

3.3.1 Purpose

Test is conducted to determine the POU system's pressure drop when flowing at the service and maximum flow rates. POU systems shall have a minimum flow rate of no less than 0.4 gpm. Ice maker filters, components, and reverse osmosis systems are exempt from Section 3.3.

3.3.2 Procedure

a. ~~Repeat~~ Perform Sections 3.2.2.a - c.
b. Increase the flow rate to the ~~service~~ maximum flow rate as published by the manufacturer. Record the pressure drop.

3.3.3 Criteria

The minimum flow rate shall be ≥ 0.4 gpm (1.5 L/min). The maximum pressure drop shall be 15 psi (103.4 kPa).

3.4 Backsiphonage During System Regeneration

3.4.2 Procedure

a. Disconnect the mineral tank and regenerant tank from the control box. If this is not possible, install the system per the manufacturer's instructions and set up the system to be able to dispense treated water.
b. Connect the system as per Figure 2.
c. Set the control box such that it would be filling the mineral tank with untreated influent water.
d. Apply slowly and hold a vacuum of ~~12.3 psig~~ 25 in-Hg (635 mm-Hg) for 5 min, then reduce the vacuum from ~~12.3 to 0 psig~~ 25 to 0 in-Hg (635 to 0 mm-Hg) over 1 min.
e. Close the quick-acting valve. Increase the vacuum upstream of the valve to ~~12.3 psig~~ 25 in-Hg (635 mm-Hg).
f. Create a surge effect by quickly opening and closing the valve once. During the test, the vacuum shall range between ~~12.3 to 0 psig~~ 25 to 0 in-Hg (635 to 0 mm-Hg).

3.7 Pressure Shock (Water Hammer)

3.7.2 Procedure

a. Install the device per Figure 4.
b. Open the flow and find a suitable flow such that when the quickly closing shut-off valve (terminating flow within 25 milliseconds) is activated, a pressure shock as measured at P2 (measuring rate of 400Hz or faster) is generated. The shock shall be two times the manufacturer's maximum rated working pressure of the device or 200 psi (1379 kPa), whichever is greater.
c. Apply the shock pressure using the quickly closing shut-off valve and repeat four times.

3.8 Structural Integrity – Hydrostatic

3.8.1 Purpose

This test is performed to ensure the system or component will be able to withstand peak pressures found in a plumbing system when assembled into a complete water treatment system.
Commercial modular systems shall comply with the structural integrity test of NSF/ANSI 42, NSF/ANSI 53 or NSF/ANSI 401, as appropriate, instead of Section 3.8.

3.8 Structural Integrity – Cycle Test

3.9.1 Purpose

This test is performed to ensure the system or component will be able to withstand repeated pressure cycling.
Commercial modular systems shall comply with the structural integrity test of NSF/ANSI 42, NSF/ANSI 53, or NSF/ANSI 401, as appropriate, instead of Section 3.9.

Section 4.0, Detailed Requirements:

4.2 Installation and Maintenance Instructions

Instructions for installing, adjusting, and maintaining the device shall be included with each device *or freely available online.*

The installation instructions for the device 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 rates
d. For devices that connect to a drain, the statement, "Connection to drain shall not pierce or damage existing pipes. Install an air gap fitting compliant with ASME A112.1.3 between this device and the drain connection."
e. System components that are designed to be replaced in the field shall be identified by component part number
f. The statement, "The device shall be made accessible for replacement and repair."

4.3 Identification and Markings

Each device shall have the following information marked on the label or data plate:

a. Name of manufacturer or trademark
b. Model number
c. Working temperature range
d. Working pressure range
e. For POU devices: the service flow rate per the manufacturer's specification sheet
f. For POE systems:
  • Flow rates at 15 psi (103.4 kPa) and 25 psi (172 kPa) pressure drops
  • The inlet and outlet connections shall be clearly marked.
  • The Cv (Kv) as determined in Section 3.1

The inlet and outlet connections shall be clearly marked.

Labels shall comply with UL 969 for permanence.