Summary of Substantive Changes
between the 2006 and 2017 editions of
ASSE 1062, Performance Requirements for Temperature Actuated Flow Reduction (TAFR) Valves for Individual Supply Fittings

Presented to the IAPMO Standards Review Committee on August 13, 2018

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

- Combined the description of the flow rate test procedures for integrated and non-integrated devices and updated the performance criteria to the current edition of ASME A112.18.1 (see Section 3.3).
- Revised the flow reduction and reset test setup to remove the 24 in maximum linear run requirement and change the required spacing from the thermocouple to the TARF valve being tested from 0.8 to 4 in (see Section 3.4 and Figure 2).
- Reduced the number of cycles in the life cycle test from 125,000 to 25,000 (see Section 3.5).
- Added requirements for NSF 61 and NSF 372 compliance for devices in contact with drinking water (see Section 4.2).
- Added requirements to include the minimum flow rate and the fitting classification in the instructions of non-integrated TARF valves (see Section 4.3).

Section 1.0 General; Clarified the requirements to use control and mixing valves in addition to the TARF valves covered in this standard as follows:

1.1 Application

This standard applies to Temperature Actuated, Flow Reduction (TAFR) Valves for Individual Supply Fittings (herein referred to as the "device") which react to high temperature water. These valves are intended for use in-line with or ~~are~~ integrated into individual plumbing supply fittings such as shower heads, bath and utility faucets and sink and lavatory faucets.

When intended for use by people with disabilities, TAFR valves covered by this standard shall also comply with ICC~~/ANSI~~ Standard A117.1.

The use of TAFR valves does not replace the requirements for valves compliant to ASSE 1016 / ASME A112.1016 / CSA B125.16, ASSE 1069, or ASSE 1070 / ASME A112.1070 / CSA B125.70 as outlined in the model codes.

1.2.4 Pressure Range

~~The device's operating pressure range shall be 10.0 to 80.0 psi (69.0 to 551.6 kPa).~~ The maximum working pressure ~~range~~ of the device shall be ~~10.0 to~~ at least 125.0 psi (~~69.0 to~~ 861.9 kPa).

Section 1.3, Reference Standards: The following standards were added, revised or deleted:

ASME A112.18.1-~~2005~~ 2012/CSA B125.1-~~2005~~ 2012 Plumbing Supply Fittings

ASME A112.18.6-2012/CSA B125.3-2012 Plumbing Fittings
ICC/ANSI A117.1-2009 Accessible and Usable Buildings and Facilities
ASME PTC 19.2-2010 (R2015) Pressure Measurement Instruments and Apparatus: Part 2 Pressure Measurement Supplement Performance Test Codes
ASME PTC 19.5-2004 (R2013) Application, Part II of Fluid Meters: Interim Supplement on Instruments and Apparatus.
ANSI/ISA M96.1 Temperature Measurement Equipment
ASSE 1016-2017 / ASME A112.1016-2017 / CSA B125.16-17 – Automatic Compensating Valves for Individual Shower & Tub/Shower Combinations
ASSE 1069-2005 – Performance Requirements for Automatic Temperature Control Mixing Valves
ASSE 1070-2015 / ASME A112.1070-2015 / CSA B125.70-15 – Water Temperature Limiting Devices
ASTM E230 / E230M - 12 Standard Specification and Temperature-Electromotive Force (emf) Tables for Standardized Thermocouples
NSF/ANSI 61-2016a – Drinking Water System Components – Health Effects
NSF/ANSI 372-2016 – Drinking Water System Components – Lead Content

Section 3.0, Performance Requirements and Compliance Testing

Section 3.2, Deterioration at Extremes of Manufacturer's Temperature and Pressure: Increased the allowable pressure to conduct the test to the manufacturer's stated maximum as follows:

3.2.2 Procedure

Install the device in a test set-up in accordance with Figure 1. Fully open the throttling valve, and then slowly open the supply valve to flow water through the device to purge the system of air. Increase the water temperature until the device actuates closed to the reduced flow position. While the device is still in the reduced flow position, adjust the water pressure to 125.0 psi ± 5.0 psi (861.9 kPa ± 34.5 kPa) or manufacturer's stated maximum, whichever is higher, and increase the water temperature to 200.0 °F ± 5.0 °F (93.3 °C ± 2.8 °C) or manufacturer's stated maximum, whichever is higher, for a period of 30 minutes ± 3 minutes. Observe for external leakage. Release the pressure, allow the device to cool, and visually inspect for damage.

3.3 Flow Rate Test: Combined the description of the test procedures for integrated and non-integrated devices and updated the performance criteria to comply with the current edition of ASME A112.18.1 as follows:

3.3.2 Procedure

Install the device into a test setup in accordance with Figure 2. The maximum linear run is not applicable for this test.

a) For devices integrated into supply fittings, iInitiate a flow of water at 104.0 °F ± 5.0 °F (40.0 °C ± 2.8 °C) through the device. Adjust the inlet pressure at the pressure gauge in accordance with the ASME A112.18.1-2005/CSA B125.1-2005 requirements for the supply fitting to which the device is integral or for the anticipated point of use device. Allow the flow to stabilize and record the flow rate.

b) For devices not integrated into a supply fitting, initiate flow of water at 104.0 °F ± 5.0 °F (40.0 °C ± 2.8 °C) through the device. Adjust the inlet pressure at the pressure gauge in accordance with the ASME A112.18.1-2005/CSA B125.1-2005 requirements. Allow the flow to stabilize and record the flow rate.

3.3.3 Criteria

a) ~~For devices integrated into supply fittings a~~ A flow rate not falling within the A112.18.1-~~2005~~/CSA B125.1-~~2005~~ requirement for the supply fitting or preventing the anticipated point of use fitting to meet ASME A112.18.1/CSA B125.1 shall result in a rejection of the device.

~~b) For devices not integrated into a supply fitting a flow rate that is less than 0.5 GPM (1.9 L/min) greater than the ASME A112.18.1-2005/CSA B125.1-2005 requirement shall result in a rejection of the device.~~

Section 3.4, Flow Reduction and Reset Test: Changed the test setup to remove the 24 in maximum linear run from the mixing valve to the device on test as follows:

3.4.2 Procedure

Install the device in a test setup in accordance with Figure 2 with a temperature-controlled supply ~~mixing valve~~ capable of a temperature change ~~settings~~ within five (5) seconds. ~~The linear run from the mixing valve to the device on test shall not to exceed 24 inches (609.6 mm) so as to minimize mixing time and heat transfer.~~ Calibrate the ~~mixing valve~~ supply for 90.0 °F (32.2 °C), 104.0 °F (40.0 °C), 125.0 °F (51.7 °C), 130.0 °F (54.4 °C), 135.0 °F (57.2 °C) and 140.0 °F (60.0 °C).

a) Initiate a flow of 104.0 °F ± 5.0 °F (40.0 °C ± 2.8 °C) ~~temperature~~ water through the device. Adjust the flow rate as indicated in Table 1 with the flow control valve.

b) After the ~~inlet water~~ thermocouple temperature is stable at 104.0 °F ± 5.0 °F (40.0 °C ± 2.8 °C), reset the ~~mixing valve~~ supply to 135.0 °F (57.2 °C), and observe the ~~inlet~~ thermocouple temperature ~~at the device~~. Measure the time from the point at which the ~~inlet~~ thermocouple temperature ~~to the device~~ exceeds 120.0 °F (48.9 °C) until the flow rate reduces to 0.25 GPM (0.95 L/m) with the supply pressure at 80.0 psi ± 2.0 psi (551.6 kPa ± 13.8 kPa).

c) With the ~~inlet water~~ thermocouple temperature at 135.0 °F ± 5.0 °F (57.2 °C ± 2.8 °C), reset the ~~mixing valve~~ supply to 90.0 °F (32.2 °C). When the ~~inlet water~~ thermocouple temperature reduces to 90.0 °F + 5.0 °F/– 0 °F (32.2 °C +2.8 °C/–0 °C), observe the flow meter and determine the time for the device to automatically or manually reset to the flow rate before reduction per Table 1.

d) Repeat b and c with the ~~mixing valve setting~~ supply setting at 125.0 °F (51.7 °C).

e) Repeat b and c with the ~~mixing valve setting~~ supply at 130.0 °F (54.4 °C).

f) Repeat b and c with the ~~mixing valve setting~~ supply at 140.0 °F (60.0 °C).

3.4.3 Criteria

Failure of the device to automatically reduce discharge flow as indicated in Table 1 within five (5) seconds after water temperature at the inlet exceeds 120.0 °F (48.9 °C) shall result in a rejection of the device. Failure of the device to reset automatically or manually to full flow within ten (10) seconds after the inlet water temperature is reduced to 90.0 °F + 5.0 °F/– 0 °F (32.2 °C +2.8 °C/–0 °C) shall result in a rejection of the device. ~~A reset open temperature less than 90.0 °F (32.2 °C) shall result in a rejection of the device~~.

Section 3.5, Life Cycle Test: Reduced the number of cycles from 125,000 to 25,000 and changed the number of intervals that hot water is supplied for 60 s from every 250 to every 50 cycles as follows:

3.5.1 Purpose

The purpose of this test is to determine that the device functions properly after being subjected to ~~125,000~~ 25,000 life cycles.

3.5.2 Procedure

Install the device in a test setup in accordance with Figure 3. Adjust the warm and cold water ~~throttling valves~~ supplies so that the discharge flow rate exceeds 1.2 GPM (4.5 L/min). Adjust the solenoid timer(s) so that the warm and cold solenoid valves are sequenced for alternating three (3) seconds ± 0.25 seconds of warm water and three (3) seconds ± 0.25 seconds of cold water flow and so that at ~~250~~ 50-cycle intervals hot water is supplied for sixty (60) seconds ± one (1) second. Adjust the temperature of the warm water supply to 104.0 °F ± 5.0 °F (40.0 °C ± 2.8 °C), the cold water supply to 50.0 °F ± 10.0 °F (10.0 °C ± 5.5 °C) and the hot water supply to 135.0 °F ± 5.0 °F (57.2 °C ± 2.8 °C). Adjust the pressure regulator so that the hot water supply pressure is 60.0 ± 3.0 psi (413.7 kPa ± 20.7 kPa).

a) Start the timer and allow the apparatus to cycle until ~~125,000~~ 25,000 warm/cold cycles and 500 hot cycles at ~~250~~ 50-cycle intervals are completed.

b) At the conclusion of the life cycle test, retest the device to Section 3.4.

Section 4.0, Detailed Requirements

Section 4.1, Materials in Contact with Water: Added NSF 61 and NSF 372 requirements as follows:

4.1 Materials in Contact with Water

Solder and fluxes containing lead in excess of 0.2% shall not be used in contact with potable water. Metal alloys in contact with potable water shall not exceed 8% lead.

~~Devices intended for applications to be used for dispensing water for human consumption shall meet the requirements of ASME A112.18.1-2005/CSA B125.1-2005, Clause 4.9.1.~~

Fittings intended to convey or dispense water for human consumption through drinking or cooking shall not contain a weighted average lead content in excess of 0.25% when evaluated in accordance with the test method specified in NSF 372.

Fittings covered by this standard and that are in contact with drinking water intended for human injection shall comply with the applicable requirements of NSF/ANSI 61.

Section 4.3, Markings: Added requirements to include the minimum flow rate and fitting classification on the instructions for non-integrated fittings as follows:

4.3.2 The packaging or installation instructions for the device that is not integrated into a supply fixture shall include the following information.

a) Maximum rated working pressure;

b) Nominal device size; and

c) Direction of flow.

d) Identify the fitting classification (e.g. Bathtub, Bidet, etc.) for acceptable applications per section 1.2.3(b).

e) Minimum flow rate prior to actuation.

Section 4.4, Installation Instructions: Added an exception to the installation instruction requirements for integrated devices as follows:

4.4.1 Complete instructions for installation shall be packaged with the device*, except when integral to a fitting assembly*. Drawings or schematic sketches which would be useful to the installer shall be part of these instructions. These instructions shall provide all information necessary for correct installation.

Figure 1: Revised to clarify the test setup and the notes as follows:

Notes:

1. *Test system piping and components shall match the test valve.*
2. *Accuracy of ~~the temperature~~ pressure measurements shall be ~~within 2.0°F (1.1 °C) and the response time of the thermocouple shall be one (1) second or less~~ in accordance with the requirements of ASME PTC 19.2 or 19.5 as applicable.*
3. *Accuracy of the thermocouple and associated measurement equipment shall be within ±1.0°F (0.6 °C). The thermocouple-associated measurement equipment shall be capable of detecting a 63.2% step change within no more than one (1) second, and the thermocouples shall be Type J or Type T per ~~ANSI/ISA M96.1~~ ASTM E230/E230M.*

Figure 2: Changed the distance of 4 in between the thermocouple and device in the test set-up and replaced the referenced standard for the type of thermocouple from ISA M96.1 to ASTM E230 in the notes as follows:

Notes:

1. *Test system piping and components shall match the test valve.*
2. *Accuracy of pressure and flow measurements shall be in accordance with the requirements of ASME PTC 19.2 or 19.5 as applicable.*
3. *Accuracy of the thermocouple and associated measurement equipment shall be within ±1.0°F (0.6 °C). The thermocouple-associated measurement equipment shall be capable of detecting a 63.2% step change within no more than one (1) second, and the thermocouples shall be Type J or Type T per ~~ANSI/ISA M96.1~~ ASTM E230/E230M.*

Figure 3: Updated the symbols in the figure to represent quick acting valves for clarification of the test setup.