Summary of Substantive Changes
between the 2012 and 2018 editions of
CSA B125.3 "Plumbing Fittings"

Presented to the IAPMO Standards Review Committee on October 15, 2018

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

- Revised the scope and requirements throughout the standard to remove automatic temperature-limiting devices, anti-siphon fill valves, flushometer valves, and supply line stops.
  - Anti-siphon fill valves are now covered by ASSE 1002/ASME A112.1002/CSA B125.12
  - flushometer valves are now covered by ASSE 1037/ASME A112.1037/CSA B125.37
  - supply line stops ASME A112.4.14/CSA B125.14
  - automatic temperature-limiting devices are now covered by ASSE 1070/ASME A112.1070/CSA B125.70;
- Added an allowance for pressure and temperature fluctuations within 5s of the pressure changes (see Section 5.7)

Section 1, Scope:

1.1

This Standard covers plumbing fittings, including the following:

~~a) anti-siphon fill valves;~~

a~~b~~) automatic compensating valves other than those for individual wall-mounted showering systems;

b~~c) flushometer valves and~~ solenoid valves;

~~d) supply line stops;~~

c~~e~~) temperature-actuated in-line mixing valves;

d~~f~~) thermal expansion relief valves; and

e~~g~~) trap primers.

1.3

This Standard does not cover

a) plumbing waste fittings, which are covered by ASME A112.18.2/CSA B125.2;

b) flexible water connectors under continuous pressure, which are covered by ASME A112.18.6/CSA B125.6;

c) pipes and tubes or pipe and tube fittings;

d) flushometer valves which are covered by ASSE 1037/ASME A112.1037/CSA B125.37;

e) anti-siphon fill valves which are covered by ASSE 1002/ASME A112.1002/CSA B125.12;

f) automatic temperature-limiting devices which are covered by ASSE 1070/ASME A112.1070/CSA B125.70; and

g) supply line stops which are covered in ASME A112.4.14/CSA B125.14.

Section 2, Reference publications

ASME (The American Society of Mechanical Engineers)

A112.1.2-~~2004~~ 2017

Air Gaps in Plumbing Systems (for Plumbing Fixtures and Water-Connected Receptors)

A112.18.3-~~2002 (R2008)~~ 2017

Performance Requirements for Backflow Protection Devices and Systems in Plumbing Fixture Fittings

ASME (The American Society of Mechanical Engineers)/CSA Group

ASME A112.18.1-2012/CSA B125.1-12 (R2017) Plumbing supply fittings

ASME A112.18.2-~~2011~~2015/CSA B125.2-~~11~~15 Plumbing waste fittings

ASME A112.18.6-~~2009~~2017/CSA B125.6-~~09~~17 Flexible water connectors

ASME A112.4.14-2017/CSA B125.14-17 Manually operated valves for use in plumbing systems

~~ASME A112.19.2-2008/CSA B45.1-08 Ceramic plumbing textures~~

ASSE (American Society of Sanitary Engineering)/ASME (The American Society of Mechanical Engineers)/CSA Group

ASSE 1016-~~2011~~2017/ASME A112.1016-~~2011~~2017/CSA B125.16-~~11~~17 Performance requirements for automatic compensating valves for individual showers and tub/shower combinations

ASSE 1002-2015/ASME A112.1002-2015/CSA B125.12-15 Anti-Siphon Fill Valves for Water Closet Tanks

ASSE 1037-2015/ASME A112.1037-2015/CSA B125.37-15 Performance requirements for pressurized flushing devices for plumbing fixtures

ASSE 1070-2015/ASME A112.1070-2015/CSA B125.70-15 Performance Requirements for Water Temperature Limiting Devices

NSF International

NSF/ANSI 61-~~2007a~~2017 Drinking Water System Components — Health Effects

NSF/ANSI 372-~~2010~~2016 Drinking Water System Components — Lead content

Section 3, Definitions and abbreviations: Definitions have been deleted or revised as follows:

~~Automatic temperature-limiting device~~ *~~— a device with a means to automatically limit the temperature of the water.~~*

~~Note:~~ *~~Automatic temperature-limiting devices reduce the risk of scalding but do not necessarily protect against thermal shock.~~*

Outlet —

Primary outlet *— the outlet from a supply fitting on the discharge side of a valve through which water will discharge unless diverted to a secondary outlet.*

Secondary outlet *— an outlet from a supply fitting on the discharge side of a valve, other than the primary outlet, through which water can be discharged.*

Submersible outlet *— an outlet from a supply fitting on the discharge side of a valve, which can be immersed in non-potable water.*

Note: *~~Fill valves and T~~trap seal primers are an example of submersible outlets.*

~~Supply line stop~~ *~~— a valve used to control the flow or water in a distribution system, except a supply stop.~~*

~~Anti-siphon fill valve~~ *~~— a valve that is used to supply water to a flush tank and has, on its discharge side, an air gap, integral mechanical backflow preventer, or vacuum breaker. It is operated by a float or similar device.~~*

~~***Flushometer valve —*** *a valve that is attached to a pressurized water supply pipe that, when actuated, opens the pipe for direct flow of water into the fixture at a rate and in a quantity that enables proper operation of the fixture. The valve then gradually closes to provide trap reseal in the fixture and avoid water hammer.*~~

Section 4, Design requirements:

4.1.2

Plumbing fittings shall be designed to function at a supply pressure between 140 and 860 kPa (20 and 125 psi). ~~*In addition, flushometer valves shall comply with Clause 5.4.1.*~~

Section 4.3, Seating members:

~~***4.3.1***~~

~~*Fill valves shall have replaceable seats unless the seat material is known to be highly resistant to wire drawing and similar damage.*~~

Section 4.9, Flushometer valves:

~~***4.9 Flushometer valves***~~

~~*The pipe sizes and inlet connections for flushometer valves shall be specified by the manufacturer*~~

Section 4.12, Automatic compensating valves and temperature limiting devices:

~~***4.12 Automatic compensating valves and temperature-limiting devices***~~

~~***4.12.1***~~ ***4.11 Automatic compensating valves***

Automatic compensating valves (other than those for individual wall-mounted showering systems, which are covered in ASME A112.18.1/CSA B125.1 by ASSE 1016/ASME A112.1016/CSA B125.16) shall be equipped with a means that limits (sets) the maximum temperature of the valve and shall comply with this Standard.

~~***4.12.2 Automatic temperature-limiting devices***~~

~~*Note: Automatic temperature-limiting devices are intended to reduce the risk of scalding and are not intended to protect against thermal shock. These devices can be separate from or integral with plumbing supply fittings.*~~

~~***4.12.2.1***~~

~~*In addition to the requirements specified in Clauses 4.12.2.2, 4.12.2.3, and 5.7.6, automatic temperature limiting devices shall comply with all other applicable requirements of this Standard.*~~

~~***4.12.2.2***~~

~~*Automatic temperature-limiting devices shall be provided with a*~~

~~*(a) fixed (non-adjustable) temperature setting; or*~~

~~*(b) temperature setting that can be*~~

~~*(i) adjusted and locked in position; or*~~

~~*(ii) protected, by use of a tool, against user access.*~~

~~***4.12.2.3***~~

~~*Automatic temperature-limiting devices shall be provided with check valves or other means of preventing cross-flow that comply with Clause 5.3.3.*~~

Section 4.18, Dimensions:

~~***4.18 Dimensions***~~

~~***4.18.1 Anti-siphon fill valves***~~

~~***4.18.1.1 Dimensions***~~

~~*The dimensions of the shank on a anti-siphon fill valve shall be as shown in Figure 2.*~~

~~***4.18.1.2 Bowl refill tube***~~

~~*The bowl refill tube, when supplied, shall be sufficiently rigid to maintain its installed position. If a clamping device is used, it shall not obstruct a cross-sectional area of the tank overflow tube of more than 20 mm2 (0.031 in2).*~~

Section 5.4, Flow rate:

~~***5.4.2 Flushometer valves***~~

~~*Flushometer valves shall complete their cycle at a flowing pressure of 70 ± 7 kPa (10 ± 1 psi).*~~

~~***5.4.3 Anti-siphon fill valves***~~

~~***5.4.3.1 Original equipment***~~

~~*When the water closet is equipped with an anti-siphon fill valve as a piece of original equipment, the total flow and refill capacity of the valve shall be sufficient to ensure proper operation of the water closet in accordance with ASME A112.19.2/CSA B45.1. The anti-siphon fill valve shall deliver a flow through the refill flow orifice at the rate required by the water closet manufacturer.*~~

~~***5.4.3.2 Retrofit***~~

~~*When the water closet is retrofitted with an anti-siphon valve, the valve shall deliver a minimum of 5.7 L/min (1.5 gpm) total flow at 103 kPa (15 psi) flowing pressure when tested in accordance with Clause 5.4.3.3. The anti-siphon fill valve shall deliver a minimum of 20% of the total flow rate through the refill orifice at 103 kPa (15 psi) flowing pressure when operated at full flow and tested in accordance with Clause 5.4.3.3.*~~

~~***5.4.3.3 Test procedure***~~

~~*The specimen shall be installed in a flush tank or container and shall be set to run fully open. The flowing pressure shall be 103 kPa (15 psi) measured at the inlet of the specimen. The total flow rate and refill flow rate shall then be measured.*~~

~~***5.4.4 Non-hold-open flushometer valves for use with low-consumption or water closets***~~

~~***5.4.4.1 Performance requirements***~~

~~*When tested in accordance with Clause 5.4.4.2, the average water consumption per cycle (flush) for non-hold-open flushometer valves for use with low-consumption water closets shall not exceed (a) 6 L (1.6 gal) over the specified range of test pressures; and (b) 7.6 L (2.0 gal) at any particular pressure.*~~

~~***5.4.4.2 Test procedure***~~

~~*At each pressure specified in this Clause, the water discharge per cycle from the specimen shall be collected and its volume measured. The test shall be repeated five times at each pressure, and the average water discharge at each pressure shall be calculated. The test pressures shall be 170 ± 14 kPa (25 ± 2 psi) flowing and 240 ± 14, 350 ± 14, and 560 ± 14 kPa (35 ± 2, 50 ± 2, and 80 ± 2 psi) static.*~~

Section 5.6, Operating requirements:

~~***5.6.4 Flushometer valves and stops***~~

~~*Flushometer valves and stops shall comply with the flushing performance requirements specified in ASME A112.19.2/CSA B45.1.*~~

Section 5.7, Automatic compensating valves: Added an allowance for pressure and temperature fluctuations within 5s of the pressure changes as follows:

5.7.1 Performance criteria

Automatic compensating valves shall ~~maintain discharge temperatures within the following limits~~ comply with the following when tested in accordance with Clause 5.7.3 or 5.7.4, as applicable:

a. For pressure-balancing ~~type~~ valves, the discharge temperature shall be maintained within ±2 °C (±4 °F), with 50% pressure fluctuation in the supply lines; and

b. For thermostatic ~~type: as specified in Table 3~~ valves, the discharge temperature change from the initial outlet set temperature shall not

i. within the initial 5 s, exceed

1) +3.0 °C (+5.4 °F) for more than 1.5 s; and

2) –5.0 °C (–9.0 °F) for more than 1 s;

(A) with 20% pressure fluctuations with supply temperature constant;

(B) and with supply pressure constant and a +15 °C to –15 °C (+27 °F to –27 °F) change in hot water supply temperature; and

ii. after the initial 5 s, exceed the limits as specified in Table 3.

Section 5.7.5, Procedure for the supply line pressure-loss test:

5.7.5.2 Performance requirements

Automatic compensating valves shall reduce the discharge flow rate to 2 L/min (0.5 gpm) or less within 5 s after the cold water supply line has been closed in accordance with Clause 5.7.5.3. During this 5 s period, the water temperature at the outlet of the automatic compensating valve shall not exceed 49 °C (120 °F) before the discharge flow rate is reduced to 2 L/min (0.5 gpm) or less in accordance with Clause 5.7.1.

Section 5.7.6, Automatic temperature limiting devices:

~~5.7.6 Automatic temperature-limiting devices~~

~~5.7.6.1 General~~

~~Automatic temperature-limiting devices shall comply with Clauses 5.7.6.2 to 5.7.6.6. The tests specified in Clauses 5.7.6.2 to 5.7.6.6 shall be conducted in the order in which they appear in this Standard.~~

~~5.7.6.2 Outlet temperature~~

~~Automatic temperature-limiting devices shall limit the water temperature at the outlet to 49 °C (120°F), or less if specified by the manufacturer, when tested in accordance with Clauses 5.7.6.5 and 5.7.6.6.~~

~~5.7.6.3 Flow rate~~

~~The flow rate for integral automatic temperature-limiting devices shall comply with the ASME A112.18.1/~~

~~CSA B125.1 flow rate requirements for the supply fitting to which they are integral.~~

~~The flow rate test specified in Clause 5.4 shall be conducted before and after conducting the life cycle test specified in Clause 5.7.6.5.~~

~~Note: Failure of the test specified in Clause 5.7.6.6.4.2 can necessitate re-evaluation and correction of the manufacturer's published minimum flow rate.~~

~~5.7.6.4 High-temperature conditioning test~~

~~Automatic temperature-limiting devices shall continue to comply with Clauses 5.7.6.5 and 5.7.6.6 after being subjected to the high-temperature conditioning test specified in Section 4.2.2 of ASSE 1016/ ASME A112.1016/CSA B125.16.~~

~~***5.7.6.5 Life cycle test***~~

~~***5.7.6.5.1 Performance requirements***~~

~~*After undergoing the life cycle test specified in Clause 5.7.6.5.2, automatic temperature-limiting devices shall not leak and shall continue to comply with Clauses 5.7.6.2 to 5.7.6.4 and 5.7.6.6.*~~

~~***5.7.6.5.2 Test set-up and procedure***~~

~~*The specimen shall be set up in accordance with Items (a) to (c) of Clause 5.8.5.2 and then subjected to 100 000 cycles of the sequence specified in Clause 5.8.5.2(e).*~~

~~***5.7.6.6 Temperature limit and supply line pressure loss tests***~~

~~***5.7.6.6.1 Minimum flow rate***~~

~~*The minimum flow rate specified by the manufacturer shall be the rate at which the device complies with the temperature-limiting requirements of Clause 5.7.6.6 at a flowing pressure of 310 ± 7 kPa (45 ± 1 psi).*~~

~~*5.7.6.6.2 Test preparation procedure*~~

~~*For the tests specified in Clauses 5.7.6.6.3 and 5.7.6.6.4, the specimen shall be set up for data gathering and testing in accordance with Sections 4.6.2 and 4.6.3 of ASSE 1016/ASME A112.1016/CSA B125.16, with the following exceptions:*~~

~~*(a) For automatic temperature-limiting devices integral with a supply fitting that meets the maximum flow rate requirements of ASME A112.18.1/CSA B125.1:*~~

~~*(i) Section 4.6.3(e) of ASSE 1016/ASME A112.1016/CSA B125.16 shall be replaced with the following: Fully open Valve V3 or remove Valve V3 so that the specimen is tested with its intended flow-control device(s) attached; and*~~

~~*(ii) the 914 ± 13 mm (36 ± 0.5 in) dimension to Sensor T3 in Figure 1 of ASSE 1016/ASME A112.1016/ CSA B125.16 shall be disregarded. Sensor T3 shall be positioned within 25 mm(1.0 in) of the discharge outlet to the fixture in the flow stream. For specimens with multiple discharges, the test shall be conducted for each discharge outlet except for the rim flush mode of bidet fittings.*~~

~~*(b) For all other automatic temperature-limiting devices:*~~

~~*(i) Section 4.6.3(e) of ASSE 1016/ASME A112.1016/CSA B125.16 shall be replaced with the following: Adjust Valve V3 so that the specimen delivers the minimum flow rate +10%, –0% at which the device complies with the temperature-limiting requirements of Clauses 5.7.6.6.3 and 5.7.6.6.4 as well as those specified in the manufacturer's literature; and*~~

~~*(ii) the 914 ± 13 mm (36 ± 0.5 in) dimension to Sensor T3 in Figure 1 of ASSE 1016/ASME A112.1016/CSA B125.16 shall be disregarded. The maximum distance shall be 457 mm (18 in) from the outlet of the specimen.*~~

~~***5.7.6.6.3 Supply line pressure loss test***~~

~~***5.7.6.6.3.1 Performance requirements***~~

~~*Automatic temperature-limiting devices shall reduce the discharge flow rate to 0.76 L/min (0.2 gpm) or to 20% of the manufacturer's published minimum flow rate, whichever is greater, within 5 s after the cold water supply line has been closed. During this 5 s period, the water temperature at the outlet of the automatic temperature-limiting device shall not exceed 49 °C (120°F) or the temperature specified by the manufacturer, whichever is lower, before the discharge flow rate is reduced to 0.76 L/min (0.2 gpm) or to 20% of the manufacturer's published minimum flow rate, whichever is greater.*~~

~~*Note: Failure of this test can necessitate re-evaluation and correction of the manufacturer's published minimum flow rate.*~~

~~***5.7.6.6.3.2 Test set-up and procedure***~~

~~*After the specimen is set up in accordance with Clause 5.7.6.6.2, Valve V2 shall be closed (closing shall take not more than 1 s to complete). The temperature at Sensor T3 and the flow rate shall be recorded*~~

~~*for at least 5 s after Shut-off Valve V2 is fully closed (see Figure 1 of ASSE 1016/ASME A112.1016/CSA B125.16).*~~

~~***5.7.6.6.4 Temperature limit test***~~

~~***5.7.6.6.4.1 Performance requirements***~~

~~*When tested in accordance with Clause 5.7.6.6.4.2, the water temperature at the outlet of automatic temperature-limiting devices shall not exceed 49 °C (120°F) or the temperature specified by the manufacturer, whichever is lower.*~~

~~*Within the initial 5 s following a temperature change at the outlet of the automatic temperature-limiting device, positive temperature spikes shall not exceed +3.0 °C (+5.4°F) for more than 1.5 s (see Figures B.1 and B.3 of ASSE 1016/ASME A112.1016/CSA B125.16). There shall be no limit on the negative temperature spikes.*~~

~~***5.7.6.6.4.2 Test set-up and procedure***~~

~~*After the specimen is set up in accordance with Clause 5.7.6.6.*~~

Section 5.8, Life cycle:

~~***5.8.7 Supply Line Stops***~~***5.8.5 Solenoid valves***

5.8.5.1 Performance requirements

After being tested in accordance with Clause 5.8.~~5~~7.2, ~~supply line stops~~ solenoid valves shall continue to function as they did before the life cycle test and shall not leak.

Section 5.9, Backflow prevention:

5.9.1.3

Fittings with plain outlets shall be protected by an air gap in accordance with ASME A112.1.2. Deck-mounted fittings shall have the air gap measured as the vertical distance from the plane of the mounting surface of the fitting to the lowest point of the outlet. When the fitting incorporates threads to accept an aerator or similar device, this measurement shall be taken with the aerator or similar device installed (see Figure 1 of ASME A112.18.1/CSA B125.1).

A critical level mark on the fittings may be used as an alternative to the air gap. The critical level shall be confirmed by the test specified in Clause 5.9.2.6 of ASME A112.18.1/CSA B125.1.

Section 6, Markings, packaging, and installation instructions:

6.2 ~~***Anti-siphon fill valves***~~ ***Thermal expansion relief valves***

~~*Anti-siphon fill*~~ *TER* valves shall be permanently marked with ~~*a line and "CL"* to indicate the critical level*~~ *"TER"* and the VOP*.

Note: **The equivalent French wording is* ~~*"NC"*~~ *"DDT".*

Figure 2, Shank for anti-siphon fill valve: The figure was deleted.