



**Summary of Substantive Changes
between the 2017 and 2022 edition of
ASME A112.4.14/CSA B125.14 “Manually or automatically operated valves for
use in plumbing systems”**

Presented to the IAPMO Standards Review Committee on September 12, 2022

General: The changes to this standard should not have an impact on currently listed products. The significant changes are:

- Expanding the scope to include automatically/electrically operated valves throughout the Standard (see Sections 1.1, 4.6, and 5.6)
- Revised test procedures for clarification (see Sections 5.2.2, 5.4.2, and 5.5.1)
- Added requirements for valves rated with high temperature and pressure (see Sections 4.1, 5.1.2, and 5.1.3)
- Added a marking requirement for the maximum working temperature for which the valve is designed (see Section 6.1.1)

The Standard title was revised as follows: Manually *or automatically* operated valves for use in plumbing systems

Section 1, Scope: Expanded the scope to include automatically/electrically operated valves as follows:

1 Scope

1.1

This Standard specifies requirements for manually *or automatically* operated valves, ~~also known as supply line stops~~, in sizes NPS 4 and smaller. ~~Valves covered by this standard are intended for installation as water shutoff valves between the meter and the supply stop.~~

~~Note: Manually or automatically operated valves covered by this standard are also known as supply line stops.~~

~~1.2~~

~~Valves covered by this Standard are intended for~~

~~a) installation as water shutoff valves between the meter and the supply stop; and~~

~~b) service at temperatures between 5 °C (40 °F) and 71 °C (160 °F), with an allowable working pressure rating not less than 862 kPa (125 psi).~~

Section 2, Reference publications: The following standards were added, revised, or removed as follows:

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

ASME A112.18.1-2018~~2~~/CSA B125.1-~~2012~~~~8~~



Plumbing supply fittings

ASME (The American Society of Mechanical Engineers)

B1.1-~~2003 (R2008)~~[2019](#)

Unified Inch Screw Threads, (UN and UNR Thread Form)

B1.20.1-2013 ([R2018](#))

Pipe Threads, General Purpose, Inch

B16.18-201~~8~~[2](#)

Cast Copper Alloy Solder Joint Pressure Fittings

B16.22-201~~8~~[3](#)

Wrought Copper and Copper Alloy Solder Joint Pressure Fittings

B16.26-201~~8~~[3](#)

Cast Copper Alloy Fittings for Flared Copper Tubes

B16.51-201~~3~~[8](#)

Copper and Copper Alloy Press-Connect Pressure Fittings

CSA Group

B242:-05 (~~R2016~~[R2021](#))

Groove-and shoulder-type mechanical pipe couplings

CSA B137.5:[20-17](#)

Crosslinked polyethylene (PEX) tubing systems for pressure applications

CSA B137.6:[20-17](#)

Chlorinated polyvinylchloride (CPVC) pipe, tubing, and fittings for hot- and cold-water distribution systems

ASSE (American Society of Sanitary Engineering)

1061-20[2015](#)

Performance Requirements for Push-Fit Fittings

ASTM International (American Society for Testing and Materials)

D1599-~~2014e1~~[2018](#)

Standard Test Method for Resistance to Short-Time Hydraulic Pressure of Plastic Pipe, Tubing, and Fittings

D1784-20~~11~~[20](#)

Standard [Classification System and Basis for Specification](#) ~~with Specification~~ for Rigid Poly (Vinyl Chloride) (PVC) Compounds and Chlorinated Poly (Vinyl Chlorinated) (CPVC) Compounds

D2466-[2017](#)~~2015~~

Standard Specification for Poly (Vinyl Chloride) (PVC) Plastic Pipe Fittings, Schedule 40

D2467-20~~15~~[20](#)

Standard Specification for Poly (Vinyl Chloride) (PVC) Plastic Pipe Fittings, Schedule 80

D2846/[D2846M-19a](#)-~~2014~~

Standard Specification for Chlorinated Poly (Vinyl Chloride) (CPVC) Plastic Hot- and Cold- Water Distribution Systems

E29-~~2013~~([2019](#))

Standard Practice for Using Significant Digits in Test Data to Determine Conformance with Specifications



F439-~~2013~~2019

Standard Specification for Chlorinated Poly (Vinyl Chloride) (CPVC) Plastic Pipe Fittings, Schedule 80

F1498-~~2008(2012)e1~~2020

Standard Specification for Metallic Mechanical Fittings for Use on Outside Diameter Controlled Thermoplastic Gas Distribution Pipe and Tubing

F1970-~~2019~~2012e1

Standard Specification for Special Engineered Fittings, Appurtenances or Valves for use in Poly (Vinyl Chloride) (PVC) and Chlorinated Poly (Vinyl Chlorinated) (CPVC) Systems

AWWA (American Water Works Association)

C606-2015

Grooved and Shouldered Joints

NSF International

NSF/ANSI/~~CAN~~ 61-202016

Drinking Water System Components — Health Effects

NSF/ANSI 359-2016

Valves for Crosslinked Polyethylene (PEX) Water Distribution Tubing Systems

NSF/ANSI 372-~~2016~~2020

Drinking Water System Components — Lead content

ISA (The International Society of Automation)

~~ANSI/ISA~~/ANSI 75.01.01-2012 (~~IEC~~ 60534-2-1 MOD)

Industrial-Process Control Valves — Part 2-1: Flow capacity — Sizing equations for fluid flow under installed conditions

Section 3, Definitions and abbreviations: Revised definitions as follows:

Flow coefficient (C_v) — ~~— flow coefficient is~~ a relative measure of a valve's efficiency at allowing fluid flow. Numerically C_v is equal to the number of gallons per minute of water at 60 °F that will flow through the valve ~~in 1 minute~~ when the pressure differential across the valve is 1 psi.

Note: See definition of **Flowfactor**.

Flow factor (K_v) — a relative measure of a valve's efficiency at allowing fluid flow. Numerically, K_v is equal to the flow rate, measured in cubic meters per hour, of water at 16 °C that will flow through the valve when the pressure differential across the valve is 100kPa. ~~with a pressure drop across the valve of 100kPa.~~

Supply stop — a valve that is placed immediately upstream of a terminal fitting used to shut off the water supply to the terminal fitting ~~so that it can be serviced or replaced.~~

Section 4, Design Requirements: Added requirements for valves rated with high temperature and pressure, and added Section 4.6 to include valves with electrical components as follows:

4.1 Rated pressure and temperatures

Valves shall be designed at a minimum for service temperatures between 5 °C (~~40 °F~~) and 71 °C (40 °F and 160 °F) (~~160 °F~~), with an allowable rated ~~with an allowable~~ working pressure rating not less than 862



kPa (125 psi). Valves rated in excess of 71 °C (160 °F) and 862 kPa (125 psi) shall be tested in accordance with Clause 5.1.3 in addition to the requirements of this standard.

4.6 Electrical components

Valves incorporating electrical features shall comply with the applicable requirements in Clause 4.13 of ASME A112.18.1/CSA B125.1.

Section 5, Performance requirements and test procedures: Added testing requirements for valves rated with high temperature and pressure, and added a test procedure for automatically operated valves as follows:

5.1.2 Test procedure for valves with service temperatures up to 71 °C

The test specimen shall withstand a hydrostatic burst pressure of 3450 kPa (500 psi) at a temperature of 23 ± 2 °C (73 ± 4 °F) for 1 min. The pressure shall be applied to the inlet with the outlet blocked and the valve open.

5.1.3 ~~T~~Alternate test procedure for valves with service temperatures higher than 71°C

Valves rated for temperatures higher than~~in excess of~~ 71 °C (160 °F) ~~and 862 kPa (125 psi)~~ shall be tested in accordance with ASTM D1599 except that

a) two test specimens shall be tested, one at a temperature of 23 ± 2 °C (73 ± 4 °F) and the second one at 82 ± 2.0 °C (180 ± 4 °F), or the manufacturer's maximum rated temperature, whichever is greater;

b). ~~t~~The burst pressure for the first valve shall not be less than three times the manufacturer's maximum rated pressure at the test ~~that~~ temperature; and

c) A second test specimen shall be tested in accordance with ASTM D1599 at a temperature of 82 ± 2.0 °C (180.0 ± 4 °F) or the manufacturer's maximum rated temperature, whichever is greater. ~~t~~The burst pressure for the second valve shall not be less than two times the manufacturer's rated pressure at the test temperature.

5.6 Operating requirements

5.6.1 Performance requirements

When closed, ~~valves shall not leak when tested for 5 min in accordance with Clause 5.6.2.~~

a) manually operated valves shall not leak when tested for 5 min in accordance with Clause 5.6.2; and

b) automatically operated valves shall not leak when tested in accordance with Clause 5.6.3.

5.6.2 Test procedure for manually operated valves

~~For manually operated valves or operating controls, e~~ Except for accessible designs, the ~~torque or~~ force required to open, operate, and close a manually ~~activated~~ operated valve or operating control shall not exceed the applicable operating ~~torque or~~ linear force specified in Table 2 when tested at temperatures and pressures specified in Clause 5.3.1.4 of ASME A112.18.1/CSA B125.1.

5.6.3 Test procedure for automatically operated valves

The test procedure for automatically operated valves shall be conducted as follows, using the same test specimen used for the life cycle test:

a) Install the test specimen in accordance with manufacturer's installation instructions.

b) Conduct the test specified in Clause 5.3.1.2 of ASME A112.18.1/CSA B125.1 at the temperatures and pressures specified in Clause 5.3.1.4 of that same standard



- c) Observe for any leakage.*
- d) Open the test specimen fully.*
- e) Disable the actuating mechanism of the test specimen.*
- f) Manually close the test specimen while measuring the force required.*
- g) Maintain the test specimen in the closed position for at least 2 min while observing for any leakage.*
- h) Manually open the test specimen while measuring the force required.*
- i) Maintain the test specimen in the open position for at least 2 min while observing for any leakage.*
- j) With the test specimen open and in full flow, enable the actuating mechanism and use it to close the test specimen in accordance with the manufacturer's instructions.*
- k) Maintain the test specimen in the closed position for at least 1 min.*
- l) Disable the actuating mechanism of the test specimen.*
- m) Verify whether the test specimen remains in the closed position.*
- n) Observe for any leakage.*
- o) Enable the actuating mechanism and use it to open the test specimen in accordance with the manufacturer's instructions.*

Section 6, Markings: Added a marking requirement for the maximum working temperature for which the valve is designed as follows:

6 Markings

6.1 General

6.1.1

Valves ~~covered by and~~ complying with this Standard shall be marked with

- a) the manufacturer's name or trademark, or private labeler's name or trademark;
- b) the maximum working pressure-~~temperature~~ for which the valve is designed;
- ~~b)~~c) the maximum working temperature for which the valve is designed;
- ~~e)~~d) the size of the valve; and
- ~~d)~~e) for unidirectional valves, the direction of flow.