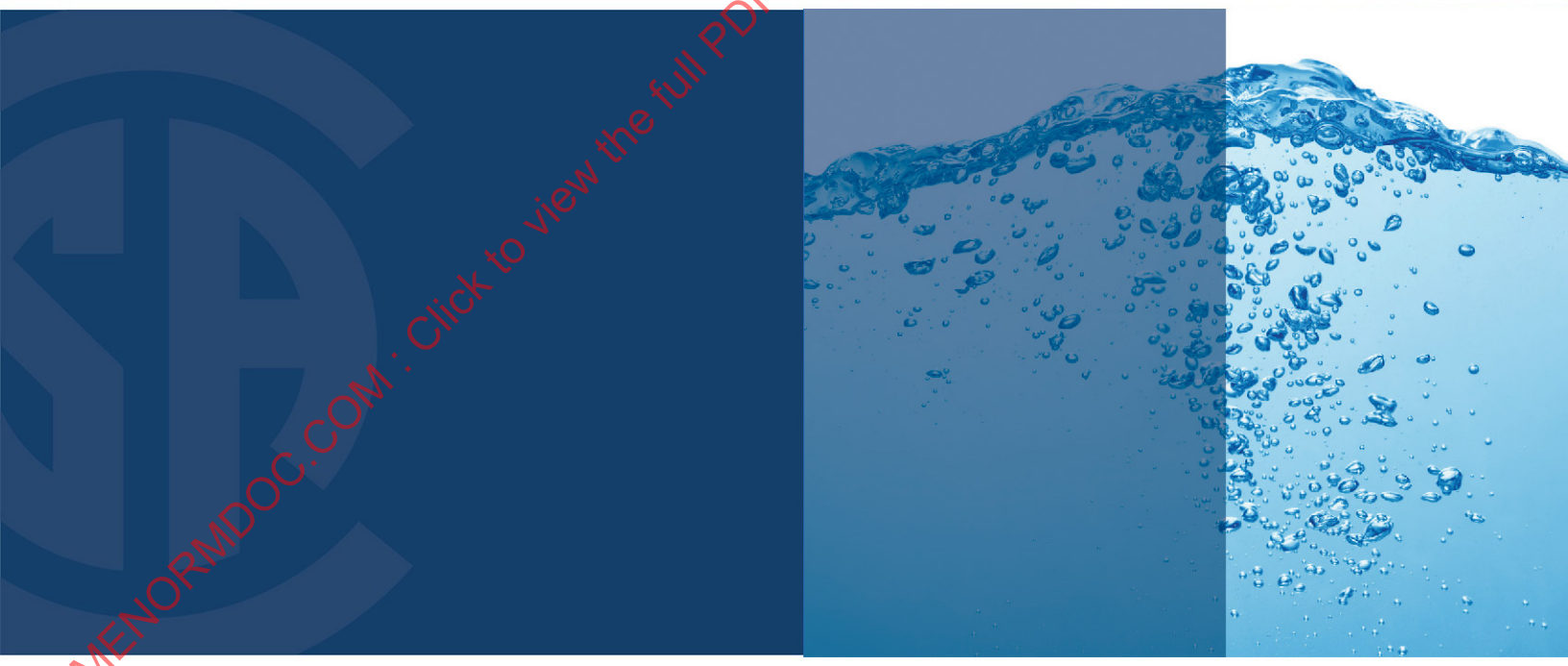
ASSE 1037-2020/ ASME A112.1037-2020/ CSA B125.37:20

National Standard of Canada
American National Standard

Performance requirements for pressurized flushing devices for plumbing fixtures



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Preface

This is the second edition of ASSE 1037/ASME A112.1037/CSA B125.37, *Performance requirements for pressurized flushing devices for plumbing fixtures*. It supersedes the previous edition published in 2015.

This Standard is considered suitable for use with conformity assessment within the stated scope of the Standard.

This Standard was prepared by the ASSE/ASME/CSA Harmonization Task Group on Plumbing Fittings, under the jurisdiction of the ASME A112 Standards Committee on Plumbing Materials and Equipment, the ASSE Product Standards Committee, and the CSA Technical Committee on Plumbing Fittings. The CSA Technical Committee operates under the jurisdiction of the CSA Strategic Steering Committee on Construction and Civil Infrastructure.

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   b) *provide an explanation of circumstances surrounding the actual field condition; and*
   c) *where possible, phrase the request in such a way that a specific "yes" or "no" answer will address the issue.*

   Committee interpretations are processed in accordance with the CSA Directives and guidelines governing standardization *and are available on the* Current Standards Activities *page at standardsactivities.csa.ca.*
5) *This Standard is subject to review five years from the date of publication. Suggestions for its improvement will be referred to the appropriate committee. To submit a proposal for change, please send the following information to inquiries@csagroup.org and include "Proposal for change" in the subject line:*
   a) *Standard designation (number);*
   b) *relevant clause, table, and/or figure number;*
   c) *wording of the proposed change; and*
   d) *rationale for the change.*

ASSE Notes:

Notes:

1) ***Requests for interpretation***

   Requests for interpretation may be sent to any of the (3) standards organizations. All interpretations are reviewed and agreed upon by the ASSE International, ASME, and CSA prior to response. Requests for interpretations may be sent to:
   Staff Engineering Group
   ASSE International

18927 Hickory Creek Drive, Suite 220
Mokena, IL 60448-8399

Requests must include:
- Name and contact information of the individual requesting the interpretation;
- Name of organization the individual represents (if any);
- Appropriate references to the standard's clauses that have a bearing on the issue cited in the request;
- A concise explanation of the issue requiring a technical interpretation;
- Any supporting documentation that will assist in understanding or describing the issue;
- Any recommendations the requestor would like to make concerning a possible technical interpretation, along with appropriate justification or comments.

Forms for requests or general guidance can be obtained by emailing staffengineer@asse-plumbing.org.

2) ***Endorsement vs. Listing***
ASSE International does not endorse any product, but rather lists products that have successfully been applied for and meet the given standard. In exchange the manufacturer is allowed to place the ASSE Seal with the given standard number on their product for public recognition.
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3) ***Patent rights***
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4) ***Committee or Working Group Membership***
Each standard is developed by a working group and then approved by the Product Standards Committee and Board of Directors of ASSE International. In order to apply for membership on a working group or any committee, the applications are available at www.asse-plumbing.org/standards/WorkingGroupApp.pdf.

ASSE 1037-2020/ ASME A112.1037-2020/ CSA B125.37:20 Performance requirements for pressurized flushing devices for plumbing fixtures

Section I

1 Scope

1.1

This Standard covers pressurized flushing devices (PFDs) intended to flush water closets, urinals, and other plumbing fixtures and specifies requirements for materials, design, methods of operation, test methods, and markings.

1.2

In this Standard, “shall” is used to express a requirement, i.e., a provision that the user is obliged to satisfy in order to comply with the Standard; “should” is used to express a recommendation or that which is advised but not required; and “may” is used to express an option or that which is permissible within the limits of the Standard.

Notes accompanying clauses do not include requirements or alternative requirements; the purpose of a note accompanying a clause is to separate from the text explanatory or informative material.

Notes to tables and figures are considered part of the table or figure and may be written as requirements.

Annexes are designated normative (mandatory) or informative (non-mandatory) to define their application.

1.3

SI units are the units of record in Canada. In this Standard the inch/pound units are shown in parentheses.

The values stated in each measurement system are equivalent in application; however, each system is to be used independently. Combining values from the two measurement systems can result in non-conformance with this Standard. All references to gallons are to U.S. gallons.

Section II

2 Reference publications and definitions

2.1 Reference publications

This Standard refers to the following publications, and where such reference is made, it shall be to the edition listed below, including all amendments published thereto.

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

ASME A112.18.1-2018/CSA B125.1-18
Plumbing supply fittings

ASME A112.19.2-2018/CSA B45.1-18
Ceramic plumbing fixtures

ASME (The American Society of Mechanical Engineers)

A112.18.3-2008 (R2017)
Performance requirements for backflow protection devices and systems in plumbing fixture fittings

A112.19.14-2013 (R2018)
Six-liter water closets equipped with a dual flushing device

B1.1-2003 (R2018)
Unified Inch Screw Threads (UN & UNR Thread Form)

B1.20.1-2013 (R2018)
Pipe Threads, General Purpose (Inch)

B16.18-2018
Cast Copper Alloy Solder Joint Pressure Fittings

B16.22-2018
Wrought Copper and Copper Alloy Solder Joint Pressure Fittings

ASSE (ASSE International Chapter of IAPMO, LLC.)

1001-2017
Performance Requirements for Atmospheric Type Vacuum Breakers

Plumbing Dictionary Sixth Edition — 2007

CSA Group

B64 Series-11 (R2016)
Backflow preventers and vacuum breakers

B64.1.1-11 (R2016)
Atmospheric vacuum breakers (AVB)

SAE International (Society of Automotive Engineers)
J512 (1997)
Automotive Tube Fittings

2.2 Definitions

In addition to the definitions in the reference publications, the following definitions shall apply in this Standard:

Back siphonage — backflow caused by below-atmospheric pressure in the water system.

Backflow — a flowing back or reversal of the normal direction of flow.
Note: *Back siphonage and back pressure are types of backflow.*

Critical level (CL) — the lowest water level in a fitting at which back siphonage will not occur.

Pressurized flushing device — a device that utilizes the water supply pressure to flush plumbing fixtures.

Non-tank type PFD (Flushometer valve) — a pressurized flushing device 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.

Tank type PFD (Flushometer tank) — a pressurized flushing device in a pressurized water supply pipe but integrated within an accumulator vessel affixed and adjacent to the fixture inlet to cause an effective enlargement of the supply line. The discharge directs the 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.

Primary control — the standard means by which the PFD is activated as designated by the manufacturer.

Secondary control — an alternative means by which the PFD is activated as designated by the manufacturer.

Section III

3 Design and general requirements

3.1 Pressures

PFDs shall be designed to function at a supply pressure between 140 and 860 kPa (20 and 125 psi). In addition, PFDs shall comply with Clause 4.2.

3.2 Temperatures

PFDs shall be designed to function with water temperature between 4 °C and 30 °C (40 °F and 85 °F).

3.3 Backflow prevention

PFDs incorporating backflow preventers shall comply with the requirements of Clause 4.3 or 4.4. When a backflow preventer is not incorporated in the PFD, installation instructions shall identify the specific types of backflow prevention required.

3.4 Accessible designs

Operating controls intended for use in accessible designs shall

a) be automatically controlled; or
b) meet the following requirements:
   i) be operable with one hand;
   ii) not require tight grasping, pinching, or twisting of the wrist; and
   iii) require an operating force not greater than 22N (5 lbf).

3.5 Control stop

If the manufacturer provides a control stop with the PFD, it shall be considered part of the PFD.

3.6 Connections to water supply and fixtures

Tapered pipe threads shall conform to ASME B1.20.1. Straight threads shall conform to ASME B1.1. Dimensions of solder-joint connections shall conform to ASME B16.18 or ASME B16.22. Compression connections shall be compatible with SAE J512.

3.6.1 Inlet connections

Inlet supply connections shall be as specified by the PFD manufacturer.

3.6.2 Outlet connections

Outlet connections shall provide pressure-tight connections to the fixture to which it is assembled, as specified in ASME A112.19.2/CSA B45.1.

3.7 Coatings

Coatings shall comply with the applicable requirements of ASME A112.18.1/CSA B125.1.

3.8 PFDs incorporating electrical features

3.8.1 General

PFDs incorporating electric features shall comply with the applicable requirements of ASME A112.18.1/CSA B125.1.

3.8.2 Testing

When used with a PFD, electrical plumbing controls, including solenoid valves, shall

a) be considered components of the PFD;
b) be tested with the PFD; and
c) comply with Clause 4.7.

Replacement of a battery during any of the testing required by this section shall not be considered a failure of the PFD.

Section IV

4 Performance requirements and test methods

4.1 General

4.1.1 Preconditioning

Before testing, specimens shall be conditioned at ambient laboratory conditions for at least 12 h.

4.1.2 Installation for testing

For test purposes, specimens shall be installed in accordance with the manufacturer's instructions. All intervals between discharges shall be sufficient so as to allow the PFD to complete its flushing cycle.

4.1.3 Test conditions

All tests shall be conducted using water temperatures between 4 °C and 30 °C (40 °F and 85 °F), unless otherwise specified in this test procedure.

4.1.4 Order of tests

Tests shall be conducted on the same specimen, in the order listed in this Standard. Where access to checking members to perform the test in Clause 4.4 would compromise the integrity of the specimen to complete the remainder of the tests, a second sample may be used solely to test per Clause 4.4.

4.2 Pressure test

4.2.1 Purpose

The purpose of this test is to determine if the PFD operates across its required pressure range.

4.2.2 Procedure

The pressure test shall be conducted as follows:

a) Install the test specimen on a test stand with the PFD discharging to atmosphere.
b) Operate the PFD (i.e., allow it to complete its flushing cycle) at a static pressure of 140 ± 14 kPa (20 ± 2 psi).
c) Repeat Item b) at a static pressure of 860 ± 14 kPa (125 ± 2 psi).
d) Subject the PFD to a static pressure of 140 ± 14 kPa (20 ± 2 psi).
e) Hold for 5 min.
f) Repeat Item b) at a static pressure of 860 ± 14 kPa (125 ± 2 psi).
g) Observe for leakage.

4.2.3 Performance criteria

Failure to complete the flushing cycle or any leakage shall result in a rejection of the PFD.

4.3 Back siphonage test — Non-tank type PFDs

4.3.1 Purpose

The purpose of this test is to ensure that the PFD incorporates a means to protect against back siphonage, except as specified in Clause 3.3.