

ASSE 1016-2017/  
ASME A112.1016-2017/  
CSA B125.16-17

# Performance requirements for automatic compensating valves for individual showers and tub/shower combinations



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## ***Standards Update Service***

*ASSE 1016-2017/*

*ASME A112.1016-2017/*

*CSA B125.16-17*

*February 2017*

**Title:** *Performance requirements for automatic compensating valves for individual showers and tub/shower combinations*

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ASSE 1016-2017/ASME A112.1016-2017/CSA B125.16-17

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The American Society of Mechanical Engineers  
(ASME) Two Park Avenue  
New York, NY 10016-5990  
USA  
**www.asme.org**

ISBN 978-0-7918-7012-9  
© 2017

The 2017 edition of this Standard is being issued with an automatic addenda subscription service. The use of addenda allows revisions made in response to public review comments or committee actions to be published as necessary.

Published in January 2017 by  
CSA Group  
A not-for-profit private sector organization  
178 Rexdale Boulevard  
Toronto, Ontario, Canada  
M9W 1R3  
1-800-463-6727 or 416-747-4744  
Visit the CSA Group Online Store at  
**shop.csa.ca**

ISBN 978-1-4883-0440-8  
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ASSE International  
18927 Hickory Creek Dr., Suite 220  
Mokena, IL 60448  
Tel: (708) 995-3019  
Fax: (708) 479-6139  
E-mail: [general.info@asse-plumbing.org](mailto:general.info@asse-plumbing.org)  
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**T-L. Su**

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<b>S.M. Rawalpindiwala</b>	Kohler Co. Plumbing Division, Kohler, Wisconsin, USA <i>Category: Producer Interest</i>	
<b>S.A. Remedios</b>	Remedios Consulting LLC, London, Ontario <i>Category: User Interest</i>	
<b>P. Saeed</b>	Powers, A Division of Watts Water Technologies, Inc., Mt. Prospect, Illinois, USA <i>Category: Producer Interest</i>	
<b>R. Sharma</b>	U.S. Environmental Protection Agency, Washington, District of Columbia, USA	<i>Associate</i>
<b>M. Sigler</b>	Plumbing Manufacturers Int'l, Orlando, Florida, USA	<i>Associate</i>
<b>W. Smith</b>	American Society of Plumbing Engineers (ASPE), Montgomery, Alabama, USA <i>Category: General Interest</i>	
<b>S. Sparling</b>	Giffin Koerth Forensic Engineering, Toronto, Ontario <i>Category: General Interest</i>	
<b>J. St-Denis</b>	Intertek Testing Services NA Ltd. Services d'essais Intertek AN Ltee., Lachine, Québec	<i>Associate</i>
<b>S. Tanner</b>	U.S. Environmental Protection Agency, Washington, District of Columbia, USA <i>Category: General Interest</i>	
<b>P. Tardif</b>	National Research Council Canada, Canadian Codes Centre, Ottawa, Ontario	<i>Associate</i>

<b>C.W. Trendelman</b>	Bargersville, Indiana, USA	<i>Associate</i>
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<b>C. Wright</b>	Ontario Pipe Trades, Dundalk, Ontario <i>Category: User Interest</i>	
<b>L. Pilla</b>	CSA Group, Toronto, Ontario	<i>Project Manager</i>

# ***ASME/ASSE/CSA Harmonization Task Group on Plumbing Fittings***

<b>R. George, CPD</b>	Plumb-Tech Design & Consulting Services, LLC, Monroe, Michigan, USA	<i>Co-Chair</i>
<b>F. Lemieux</b>	Health Canada, Ottawa, Ontario, Canada	<i>Co-Chair</i>
<b>M. Malatesta</b>	American Standard, Piscataway, New Jersey, USA	<i>Co-Chair</i>
<b>J.E. Bertrand</b>	Moen Inc., North Olmsted, Ohio, USA	
<b>M. Campos</b>	ICC Evaluation Service, LLC, Whittier, California, USA	
<b>W.E. Chapin</b>	Professional Code Consulting, LLC, Cullman, Alabama, USA	
<b>R. Cota</b>	Leonard Valve, Cranston, New Jersey, USA	
<b>N. Dickey</b>	CSA Group, Cleveland, Ohio, USA	
<b>J.F. Higdon</b>	Apollo Valves/Conbraco Industries, Matthews, North Carolina, USA	
<b>L. Himmelblau</b>	Chicago Faucet Company, Des Plaines, Illinois, USA	
<b>C. Jahrling</b>	ASSE International, Mokena, Illinois, USA	
<b>N.M. Kummerlen</b>	Lorain, Ohio, USA	
<b>E. Lyczko</b>	Cleveland Clinic (Ret.), Cleveland, Ohio, USA	

<b>D. Orton</b>	NSF International, Ann Arbor, Michigan, USA	
<b>S. Rawalpindiwala</b>	Kohler Co., Kohler, Wisconsin, USA	
<b>S.A. Remedios</b>	Remedios Consulting, LLC, London, Ontario, Canada	
<b>P. Saeed</b>	Powers (a division of Watts Water Technologies, Inc.), Mt. Prospect, Illinois, USA	
<b>W.M. Smith</b>	American Society of Plumbing Engineers, Montgomery, Alabama, USA	
<b>L. Pilla</b>	CSA Group, Toronto, Ontario, Canada	<i>Project Manager</i>

# Preface

This is the second edition of ASSE 1016/ASME A112.1016/CSA B125.16, *Performance requirements for automatic compensating valves for individual showers and tub/shower combinations*. It supersedes the previous edition published in 2011.

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 Main Committee, 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.

This Standard will be submitted for formal approval by the ASME Standards Committee on Plumbing Materials and Equipment, the ASSE Product Standards Committee and the CSA Technical Committee. This Standard was approved as an American National Standard by the American National Standards Institute on January 6, 2017.

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- 1) Use of the singular does not exclude the plural (and vice versa) when the sense allows.
- 2) Although the intended primary application of this Standard is stated in its Scope, it is important to note that it remains the responsibility of the users of the Standard to judge its suitability for their particular purpose.
- 3) This publication was developed by consensus, which is defined by CSA Policy governing standardization — Code of good practice for standardization as “substantial agreement. Consensus implies much more than a simple majority, but not necessarily unanimity”. It is consistent with this definition that a member may be included in the Technical Committee list and yet not be in full agreement with all clauses of this publication.
- 4) To submit a request for interpretation of CSA Standards, please send the following information to [inquiries@csa.ca](mailto:inquiries@csa.ca) and include “Request for interpretation” in the subject line:
  - a) define the problem, making reference to the specific clause, and, where appropriate, include an illustrative sketch;
  - 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.
  - d) Committee interpretations are processed in accordance with the CSA Directives and guidelines governing standardization and are published in CSA’s periodical Info Update, which is available on the CSA website at <http://standardsactivities.csa.ca>.
- 5) CSA Standards are subject to periodic review, and suggestions for their improvement will be referred to the appropriate committee. To submit a proposal for change to CSA Standards, please send the following information to [inquiries@csa.ca](mailto:inquiries@csa.ca) 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.
- 6) Attention is drawn to the possibility that some of the elements of this Standard may be the subject of patent rights. CSA is not to be held responsible for identifying any or all such patent rights. Users of this Standard are expressly advised that determination of the validity of any such patent rights is entirely their own responsibility.

# ASSE Foreword

This Foreword is not part of the Standard; however, it is offered to provide background information.

Several suggestions received from persons having had a disturbing experience with shower valves which were potentially hazardous allowing sudden surges of high temperature water to flow from the shower head prompted the initiation of the ASSE 1016 standard in 1973. Documents and field experiences relating to the behavioural characteristics of different classes of devices were studied and evaluated, and from this, the standard text was developed. Since that time, extensive research has been conducted toward the development of this standard in its current form.

This harmonized Standard was developed in response to an industry request for a harmonized set of requirements between ASSE 1016-2005 and Clause 5.10 of ASME A112.18.1-2005/CSA B125.1-05. In recognition of energy and water efficiency requirements, which have further reduced the maximum flow rate requirements in certain areas, testing requirements to address the performance of shower valves rated for shower heads and body sprays rated at less than 9.5 L/min (2.5 GPM) flow rates were needed to be addressed.

In 2005 the CSA/ASME Joint Harmonization Task Group formed a task force FT-05-24 to accomplish this end. The TF was joined by members of ASSE and their historical 1016 Working Group. The first meeting was held on August 30, 2007.

The shower control valves covered by this Standard are only those which will, in cases of changes to the incoming water supply pressure or temperature, reduce the risk of scalding and thermal shock by protecting the bather from exposure to such changes in water temperature that produce these effects.

These devices generally have one cold water inlet connection, one hot water inlet connection, and a mixed water outlet connection(s).

This Standard provides engineers, designers, manufacturers, health authorities, inspection agencies and others with a set of minimum performance requirements for such individual automatic compensating valves.

Recognition is made of the time volunteered by members of the Joint Harmonization Task Group and Task Force, the ASME members, ASSE members and CSA members and of the support of the manufacturers who also participated in the meetings for this standard.

The Standard does not imply ASME, ASSE, or CSA's endorsement of a product which conforms with these requirements.

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

It is recommended that these devices be installed consistent with local codes.

# ASSE 1016-2017/ ASME A112.1016-2017/ CSA B125.16-17

## ***Performance requirements for automatic compensating valves for individual showers and tub/shower combinations***

### **Section I**

#### **1 Scope**

##### **1.1**

This Standard applies to automatic compensating valves intended to be installed at the point of use, where the user has access to flow or final temperature controls, and where no further mixing occurs downstream of the device.

**Note:** *In this Standard, automatic compensating valves are also referred to as devices.*

##### **1.2**

This Standard covers automatic compensating valves intended to control the water temperature to wall or ceiling mounted

- a) hand-held showers;
- b) shower heads;
- c) body sprays either in individual shower or tub/shower combination fittings; and
- d) tub spouts when part of tub/shower combination fittings.

##### **1.3**

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.

## 1.4

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 A112.18.1-2012/CSA B125.1-12

*Plumbing supply fittings*

##### **ASSE International**

*Plumbing Dictionary Sixth Edition — 2007*

#### 2.2 Definitions

In addition to the definitions in ASME A112.18.1/CSA B125.1 and in the ASSE *Plumbing Dictionary*, the following definitions shall apply in this Standard:

**Automatic compensating valve** — a water-mixing valve that is supplied with hot and cold water and that provides a means of automatically maintaining the water temperature selected for an outlet.

**Note:** *Automatic compensating valves are used to reduce the risk of scalding and thermal shock.*

**Combination pressure-balancing and thermostatic compensating valve (Type T/P)** — a compensating valve that senses inlet supply hot and cold water pressures before mixing, senses the water temperature at the outlet, and compensates for pressure and thermal variations to maintain the water temperature at the outlet.

**Pressure-balancing compensating valve (Type P)** — a compensating valve that senses inlet supply hot and cold water pressures and compensates for variations in the inlet supply pressures to maintain the water temperature at the outlet.

**Thermostatic compensating valve (Type T)** — a compensating valve that senses the water temperature at the outlet and compensates for thermal variations to maintain the water temperature at the outlet.

**Initial outlet set temperature** — the average of the values of the mixed temperature measured at the outlet for the 10 s immediately preceding the temperature change measured at the outlet resulting from a pressure or temperature change.