ASME A112.19.10-2017
[Revision of ASME A112.19.10-2003 (R2008)]

Retrofit Dual Flush Devices for Water Closets

AN AMERICAN NATIONAL STANDARD

The American Society of Mechanical Engineers

ASME A112.19.10-2017
[Revision of ASME A112.19.10-2003 (R2008)]

Retrofit Dual Flush Devices for Water Closets

AN AMERICAN NATIONAL STANDARD

The American Society of Mechanical Engineers

Two Park Avenue • New York, NY • 10016 USA

Date of Issuance: February 21, 2018

This Standard will be revised when the Society approves the issuance of a new edition.

ASME issues written replies to inquiries concerning interpretations of technical aspects of this Standard. Interpretations are published on the Committee Web page and under http://go.asme.org/InterpsDatabase. Periodically certain actions of the ASME A112 Committee may be published as Cases. Cases are published on the ASME Web site under the A112 Committee Page at http://go.asme.org/A112committee as they are issued.

Errata to codes and standards may be posted on the ASME Web site under the Committee Pages to provide corrections to incorrectly published items, or to correct typographical or grammatical errors in codes and standards. Such errata shall be used on the date posted.

The A112 Committee Page can be found at http://go.asme.org/A112committee. There is an option available to automatically receive an e-mail notification when errata are posted to a particular code or standard. This option can be found on the appropriate Committee Page after selecting “Errata” in the “Publication Information” section.

ASME is the registered trademark of The American Society of Mechanical Engineers.

This code or standard was developed under procedures accredited as meeting the criteria for American National Standards. The Standards Committee that approved the code or standard was balanced to assure that individuals from competent and concerned interests have had an opportunity to participate. The proposed code or standard was made available for public review and comment that provides an opportunity for additional public input from industry, academia, regulatory agencies, and the public-at-large.

ASME does not “approve,” “rate,” or “endorse” any item, construction, proprietary device, or activity.

ASME does not take any position with respect to the validity of any patent rights asserted in connection with any items mentioned in this document, and does not undertake to insure anyone utilizing a standard against liability for infringement of any applicable letters patent, nor assume any such liability. Users of a code or standard are expressly advised that determination of the validity of any such patent rights, and the risk of infringement of such rights, is entirely their own responsibility.

Participation by federal agency representative(s) or person(s) affiliated with industry is not to be interpreted as government or industry endorsement of this code or standard.

ASME accepts responsibility for only those interpretations of this document issued in accordance with the established ASME procedures and policies, which precludes the issuance of interpretations by individuals.

No part of this document may be reproduced in any form,
in an electronic retrieval system or otherwise,
without the prior written permission of the publisher.

The American Society of Mechanical Engineers
Two Park Avenue, New York, NY 10016-5990

Copyright © 2018 by
THE AMERICAN SOCIETY OF MECHANICAL ENGINEERS
All rights reserved
Printed in U.S.A.

CONTENTS

FOREWORD

The purpose of this Standard is to establish a nationally recognized standard for dual flush devices to achieve volumetric water saving performance for water closets. This Standard provides guidance to manufacturers, distributors, purchasers, and jurisdiction officials, specifiers, or water utility planners for water conservation, to promote better understanding between suppliers and users, and to furnish a basis for fair competition in furnishing such products to meet the principal demands of the trade.

This Standard includes a series of tests for retrofit dual flush devices for modification of the flush volume from installed water closets that use 1.28 gal per flush or a greater volume, to reduce water consumption, that may apply such control options to provide two distinctive modes of operation. The devices considered to be covered in this Standard are those required to provide at least a 30% reduction in water consumption in the reduced flush mode and still meet the required performance levels of the Standard.

The reduction in water closet flush volume discharges that may be made by a variety of techniques, other than one or another single motion selector actuation and leaving the unit, are not covered by this Standard. Other active or passive techniques, or methods not covered, include, but are not restricted to: installation of dams; displacement volume containers; cylindrical or other shaped water barrier containment elements; and hand-held observer, evaluator, and/or controls for termination of the flush. OEM devices are not covered by this Standard.

The tests specified in this Standard for the removal of liquid wastes and toilet tissues, or other comparable waste loads, are derived from industry experience, from field unit installations, independent laboratory evaluations by the methods included herein, and research studies. The endeavor accounts for service requirements that are necessary for the sanitary protection provided by water closets and water conservation achievable through the installation of these devices. The tests presented are from demonstrated applications by competent laboratory personnel and from other standards applications giving results of suitable reproducibility for the purposes intended.

ASME A112.19.10-1994 was the first edition of this Standard. The second edition, ASME A112.19.10-2003, changed the performance requirements to provide for an acceptable amount of leakage. In addition, soft metric conversion of the U.S. customary units were added and a number of minor editorial errors have been corrected.

This revision of the 2003 edition has changed the scope of this Standard to cover retrofit devices which are to be fitted into installed water closets that use 1.28 gal per flush or greater volume. This Standard was approved as an American National Standard on June 19, 2017.

ASME A112 COMMITTEE
Standardization of Plumbing Materials and Equipment

(The following is the roster of the Committee at the time of approval of this Standard.)

STANDARDS COMMITTEE OFFICERS

W. M. Smith, *Chair*
S. Rawalpindiwala, *Vice Chair*
A. L. Guzman Rodriguez, *Secretary*

STANDARDS COMMITTEE PERSONNEL

R. K. Adler, City of San Jose
J. A. Ballanco, JB Engineering and Code Consulting
J. E. Bertrand, Moen, Inc.
A. Bonlender, Bradley Corp.
R. Burnham, Zurn Industries, LLC
M. Campos, ICC Evaluation Service, LLC
W. E. Chapin, Professional Code Consulting, LLC
P. V. DeMarco, IAPMO
N. E. Dickey, CSA Group
G. S. Duren, Code Compliance, Inc.
R. Emmerson, Consultant
R. L. George, Plumb-Tech Design and Consulting Services, LLC
A. L. Guzman Rodriguez, The American Society of Mechanical Engineers
G. W. Harrison, Consultant
L. Himmelblau, Chicago Faucet
J. M. Koeller, Koeller and Co.
C. J. Lagan, American Standard
J. W. Lauer, Sloan Valve Co.
W. LeVan, Cast Iron Soil Pipe Institute
D. Marbry, Fluidmaster, Inc.
R. Mata, CSA Group
L. A. Mercer, IAPMO
D. Orton, NSF International
S. Rawalpindiwala, Kohler Co.
S. A. Remedios, Remedios Consulting, LLC
M. Sigler, Plumbing Manufacturers International
G. L. Simmons, Charlotte Pipe & Foundry
W. M. Smith, American Society of Plumbing Engineers
J. C. Watson, Elkay Manufacturing
M. Weiss, Plumbing & Drainage Institute
W. C. Whitehead, Whitehead Consulting Services
A. Ciechanowski, *Alternate,* NSF International
F. DiFolco, *Alternate,* CSA Group
D. Gleiberman, *Alternate,* Sloan Valve Co.
C. N. Gross, *Alternate,* IAPMO
D. Liang, *Alternate,* CSA Group
M. Malatesta, *Alternate,* American Standard
C. McLeod, *Alternate,* Kohler Co.
W. B. Morris, *Alternate,* Charlotte Pipe & Foundry
D. Viola, *Alternate,* IAPMO
S. L. Cavanaugh, *Contributing Member,* Cavanaugh Consulting
C. L. Jahrling, *Contributing Member,* ASSE International
N. M. Kummerlen, *Contributing Member,* Consultant

A112.19.10 PROJECT TEAM — DUAL FLUSH DEVICES FOR WATER CLOSETS

M. Campos, *Chair,* ICC Evaluation Service, LLC
B. Antunez, BNC Crown of Creation
D. R. Berge, 5D Infusion Canada, Inc.
N. E. Dickey, CSA Group
D. Gleiberman, Sloan Valve Co.
L. Himmelblau, Chicago Faucet
C. J. Lagan, American Standard
D. Marbry, Fluidmaster, Inc.
S. Rawalpindiwala, Kohler Co.
R. L. Schnakenberg, Ariwesco, Inc.

CORRESPONDENCE WITH THE A112 COMMITTEE

General. ASME Standards are developed and maintained with the intent to represent the consensus of concerned interests. As such, users of this Standard may interact with the Committee by requesting interpretations, proposing revisions or a case, and attending Committee meetings. Correspondence should be addressed to:

Secretary, A112 Standards Committee
The American Society of Mechanical Engineers
Two Park Avenue
New York, NY 10016-5990
http://go.asme.org/Inquiry

Proposing Revisions. Revisions are made periodically to the Standard to incorporate changes that appear necessary or desirable, as demonstrated by the experience gained from the application of the Standard. Approved revisions will be published periodically.

The Committee welcomes proposals for revisions to this Standard. Such proposals should be as specific as possible, citing the paragraph number(s), the proposed wording, and a detailed description of the reasons for the proposal, including any pertinent documentation.

Proposing a Case. Cases may be issued to provide alternative rules when justified, to permit early implementation of an approved revision when the need is urgent, or to provide rules not covered by existing provisions. Cases are effective immediately upon ASME approval and shall be posted on the ASME Committee Web page.

Requests for Cases shall provide a Statement of Need and Background Information. The request should identify the Standard and the paragraph, figure, or table number(s), and be written as a Question and Reply in the same format as existing Cases. Requests for Cases should also indicate the applicable edition(s) of the Standard to which the proposed Case applies.

Interpretations. Upon request, the A112 Standards Committee will render an interpretation of any requirement of the Standard. Interpretations can only be rendered in response to a written request sent to the Secretary of the A112 Standards Committee.

Requests for interpretation should preferably be submitted through the online Interpretation Submittal Form. The form is accessible at http://go.asme.org/InterpretationRequest. Upon submittal of the form, the Inquirer will receive an automatic e-mail confirming receipt.

If the Inquirer is unable to use the online form, he/she may mail the request to the Secretary of the A112 Standards Committee at the above address. The request for an interpretation should be clear and unambiguous. It is further recommended that the Inquirer submit his/her request in the following format:

Subject:	Cite the applicable paragraph number(s) and the topic of the inquiry in one or two words.
Edition:	Cite the applicable edition of the Standard for which the interpretation is being requested.
Question:	Phrase the question as a request for an interpretation of a specific requirement suitable for general understanding and use, not as a request for an approval of a proprietary design or situation. Please provide a condensed and precise question, composed in such a way that a “yes” or “no” reply is acceptable.
Proposed Reply(ies):	Provide a proposed reply(ies) in the form of “Yes” or “No,” with explanation as needed. If entering replies to more than one question, please number the questions and replies.
Background Information:	Provide the Committee with any background information that will assist the Committee in understanding the inquiry. The Inquirer may also include any plans or drawings that are necessary to explain the question; however, they should not contain proprietary names or information.

Requests that are not in the format described above may be rewritten in the appropriate format by the Committee prior to being answered, which may inadvertently change the intent of the original request.

Moreover, ASME does not act as a consultant for specific engineering problems or for the general application or understanding of the Standard requirements. If, based on the inquiry information submitted, it is the opinion of the Committee that the inquirer should seek assistance, the inquiry will be returned with the recommendation that such assistance be obtained.

ASME procedures provide for reconsideration of any interpretation when or if additional information that might affect an interpretation is available. Further, persons aggrieved by an interpretation may appeal to the cognizant ASME Committee or Subcommittee. ASME does not "approve," "certify," "rate," or "endorse" any item, construction, proprietary device, or activity.

Attending Committee Meetings. The A112 Standards Committee regularly holds meetings and/or telephone conferences that are open to the public. Persons wishing to attend any meeting and/or telephone conference should contact the Secretary of the A112 Standards Committee. Future Committee meeting dates and locations can be found on the Committee Page at http://go.asme.org/A112committee.

INTENTIONALLY LEFT BLANK

RETROFIT DUAL FLUSH DEVICES FOR WATER CLOSETS

1 GENERAL

1.1 Scope

This Standard establishes physical, material, testing, and marking requirements for retrofit dual flush devices that are installed within gravity-type water closet tanks and have a full flush volume of 4.8 Lpf (1.28 gpf) or greater volume.

1.2 Units of Measurement

The values stated in either SI (metric) or U.S. Customary (inch/pound) units of measure are to be regarded as the standard. 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 nonconformance with this Standard. All references to gallons are to U.S. gallons.

1.3 References

The following document forms a part of this Standard to the extent specified herein. Unless otherwise specified, the latest edition shall apply.

ASME A112.19.5/CSA B45.15, Flush Valves and Spuds for Water Closets, Urinals, and Tanks
Publisher: The American Society of Mechanical Engineers (ASME), Two Park Avenue, New York, NY 10016-5990 (www.asme.org)

1.4 Definitions

cycle time: the time beginning at the instant the flush release device is operated, and ending at the instant the water supply valve is completely shut off and the water stops flowing.

dual flush device: a mechanism for control of water closet discharge that provides the user with two options for selective operation with either a normal fill volume or a reduced volume of water from the tank.

flapper valve: see *flush valve*.

flowing pressure: the pressure in a water supply pipe at the inlet to an open valve.

flush tank (gravity type): a vessel that stores a predetermined quantity of water and includes a flushing device to discharge water (plus some through-flow from the water supply line) into a water closet bowl or urinal.

NOTE: A common type of flush tank is a wall-hung vessel or a vessel close-coupled with the water closet bowl that is fitted with a fill valve and flush valve.

flush valve: a valve located in a flush tank and used to flush a fixture by discharging water into the fixture.

sanitary: reasonably acceptable appearance and not necessarily microbiologically clean.

water closet: a plumbing fixture having a water-containing receptor that receives liquid and solid body waste and, upon actuation, conveys the waste through an exposed integral trap seal into a gravity drainage system.

water savings: the amount of flush volume water reduction in gallons or percentage when comparing consumption with and without a dual flush device for a water closet.

water surface: the surface of the still water in the water closet bowl when filled to the trap weir.