American National Standard

ASSE 1012-2021

Performance Requirements for

Backflow Preventers with an Intermediate Atmospheric Vent

ASSE Board Approved: November 2021
ANSI Approved: November 2021
ICS Codes: 23 060 50, 91 140 60

Approved American National Standard ANSI

SANITARY ASSE ENGINEERING Prevention Rather Than Cure ®

General Information

No product may be said to be ASSE listed unless the manufacturer has received approval from ASSE International, and the product is listed in ASSE's online directory. Instructions for receiving the authorization to display the ASSE Seal are available from the ASSE International Office. Organizations wishing to adopt or list any ASSE standard should print the ASSE standard number on the cover page first and in equal or larger type to that of the adopting or listing organization.

ASSE International
Mokena, Illinois

Foreword

This foreword shall not be considered a part of the standard; however, it is offered to provide background information.

ASSE standards are developed in the interest of consumer safety. The recognition of probable sources or causes of contamination of a potable water supply system and the application of essential devices, or means, to prevent the entrance of contaminants to the potable water supply system whereby it becomes unfit for human or animal consumption, is vital to the maintenance of its continued potability.

There are two basic and practiced methods for the protection of the potable water supplies:

a) Protection by Containment:
That is the isolation, by suitable devices or means, of the system within the premises supplied, wherein may lie the source or sources of contamination, from the vender's or public water supply system.

(b) Protection of Each Individual Outlet:
By suitable devices or means, which outlets, within the premises served may be a source of contamination.

Protection by containment protects the vender's or public water supply only by isolation of a building from the source of supply. It does not provide protection within the premises supplied. Serious contamination of the potable water supply within the premises can be hazardous to the health of the occupants therein unless every potentially offending outlet is protected. Within every occupancy there are outlets which can be sources of contamination. Each occupancy has conditions peculiar to its nature and the degree of health hazards vary widely from minor to potentially fatal.

Contaminant flow into a potable water supply system from a polluted source is caused by backflow due to either backpressure or back-siphonage or both. Consequently, the control of the conditions of cause requires preventive devices or means of varying behavioral characteristics. Contemporary backflow preventive devices are of many classes, ranging from the simple air gap and atmospheric vacuum breaker through several classes of check valve assemblies, some with intermediate atmospheric vents and vacuum breakers to the sophisticated reduced pressure backflow preventer. Each is tailored to the protective requirements essential to specified system conditions and the degree of health hazard involved.

The devices covered by this standard are designed to give protection against low hazard backpressure backflow, backsiphonage or both, if needed on individual outlets. They are not designed nor intended for building isolation or high hazard conditions which would find full protection only by the reduced pressure backflow preventer. The devices covered by this standard are suitable for both hot and cold water systems under either intermittent or continuous pressure conditions.

Although many of the material specifications are detailed within Section IV of this standard, it is the responsibility of the manufacturer to comply with the requirements of the Safe Drinking Water Act, United States Public Law 93-523.

The working group which developed this standard revision, was set up within the framework of the Product Standards Committee of ASSE International.

Recognition is made of the time volunteered by members of this working group and of the support of manufacturers who also participated in meetings for this standard.

This standard does not imply ASSE International's endorsement of a product which conforms to these requirements.Compliance with this standard does not imply acceptance by any code body.

It is recommended that these devices be installed consistent with local codes by qualified and trained professionals.

This standard was promulgated in accordance with the ASSE International Procedures for Standards Development as approved by the American National Standards Institute (ANSI).

2021 Product Standards Committee

Tsan-Liang Su, PhD, Chairperson
Stevens Institute of Technology
Hoboken, NJ

Karl Abrahamson
Saint Paul Department of Safety and Inspections
Cottage Grove, MN

Brian Andersen
Plumbers' JAC LU130
Chicago, IL

John Bertrand
Watts Water Technologies
Cleveland, OH

Julia Briggs
NSF International
Ann Arbor, MI

William Briggs Jr.
TSF Engineering
New York, NY

Terry Burger (non-voting)
ASSE International
Cleveland, OH

William Chapin
Professional Code Consulting, LLC
Cullman, AL

Mark E. Fish
Zurn Industries, LLC
Cary, NC

Ron George
Plumb-Tech Design & Consulting Services LLC
Newport, MI

Mark Gibeault
Kohler Company
Kohler, WI

Daniel Gleiberman
Sloan Valve Company
Los Angeles, CA

Brandon Gunnell
Precision Plumbing Products
Portland, OR

Chris Haldiman
Watts Water Technologies
Springfield, MO

John F. Higdon, P.E.
Supply Source Products
Matthews, NC

Jim Kendzel
American Supply Association
Itasca, IL

Ramiro Mata
ASPE
Mentor, OH

Bob Neff
Delta Faucet
Pendleton, IN

David Orton
NSF International
Ann Arbor, MI

Thomas Pitcherello
State of New Jersey
Bordentown, NJ

Daniel Rademacher
Viega, LLC
Butte, MT

Shabbir Rawalpindiwala
Kohler Company
Kohler, WI

Billy Smith
ASPE
Montgomery, AL

Chris White (non-voting)
ASSE International
Mokena, IL

1012 Working Group

Matteo Fantoni
Giacomini S.P.A
San Maurizio d'Opaglio (NO)
Italy

Mark Fish
Zurn Industries, LLC
Cary, NC
USA

Alberto Franzi
Giacomini S.P.A
San Maurizio d'Opaglio (NO)
Italy

Chris Haldiman
Watts Water Technologies
Springfield, MO
USA

John F. Higdon, P.E.
Supply Source Products
Matthews, NC
USA

Daniel Miller
Apollo/Conbraco
Pageland, SC
USA

Daniel Pierce
Reliance Worldwide Corp.
Atlanta, GA
USA

Reuben Westmoreland
Zurn / Wilkins
Paso Robles, CA
USA

Table of Contents

Performance Requirements for **Backflow Preventers with an Intermediate Atmospheric Vent**

Section I

1.0 General

1.1 Application

Backflow Preventers with Intermediate Atmospheric Vent (herein referred to as the “device”) are installed in the plumbing system to prevent backflow into potable water supply lines when pressure is temporarily higher in the polluted part of the system than in the potable water piping.

1.2 Scope

1.2.1 Description

The devices covered by this standard are those which have functional capabilities for preventing both backsiphonage and backpressure and which can operate under continuous or intermittent pressure conditions. These devices have 2 independently operating check valves separated by an intermediate chamber with a means for automatically venting it to the atmosphere and can be installed in the horizontal, vertical up or vertical down orientations. The check valves are force loaded to a normally closed position and the venting means is force loaded to a normally open position.

1.2.2 Size Range

Inlet and outlet pipe sizes are 1/4 to 3/4 NPS (8 mm to 20 mm) inclusive.

1.2.3 Minimum Pressure Rating

The device shall be designed and constructed for a working pressure of at least 150.0 psi (1034.2 kPa) static.

1.2.4 Temperature Range

The device shall be designed and constructed for normal flow temperatures of 40.0°F to 210.0°F (4.4°C to 98.9°C) and an emergency backpressure temperature of 250.0°F (121.1°C).

1.2.5 Flow Rate

Manufacturer’s advertised maximum flow rate.