ASSE/ANSI 1019-2023



Performance Requirements for

Wall Hydrant with Backflow Protection and Freeze Resistance

ASSE Board Approved: September 2023
ANSI Approved: November 2023
ICS Codes: 23 060 99

Approved American National Standard
ANSI

SANITARY
ASSE
ENGINEERING
Prevention Rather Than Cure
®

General Information

Neither this standard, nor any portion thereof, may be reproduced without the written consent of ASSE International.

No product may be said to be ASSE listed unless the manufacturer has applied to the ASSE, has had his product tested according to the applicable ASSE Standards, and when the product has passed the test, displays the ASSE Seal on the product.

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, IL
Copyright © 2023, 2011, 2004, 1997, 1995, 1993, 1978, 1976
All rights reserved.

Foreword

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

ASSE Product Standards are developed in the interest of consumer safety.

ASSE International considers product performance standards to be of great value in the development of improved plumbing systems.

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

The standard does not imply ASSE's endorsement of a product which conforms to these requirements.

ASSE recognized the common garden or utility hose, when connected to a potable water supply by means of hose threaded outlet, constitutes a potential non-potable cross-connection and that a performance standard for preventive means, the vacuum breaker wall hydrant, was warranted. ASSE Standard 1019, *Wall Hydrants Vacuum Breakers Frost Proof Automatic Draining Types*, was developed and issued to fulfill this requirement.

Plumbing codes now stipulate that hose connections shall be protected by approved vacuum breakers that conform to the performance requirements of ASSE Standard 1011. Accordingly, hose bibbs, sill cocks, lawn faucets, frost free wall hydrants and the like must be so equipped.

Frost resistant wall hydrants equipped with hose connection vacuum breakers pose a restriction to the post closure drainage, which is essential for frost prevention. Such vacuum breakers must be manually triggered to permit drainage, thereby, in effect, negating the frost proof feature of these hydrants which rely on automatic drainage. Thus, it becomes readily apparent to manufacturers of frost proof hydrants that resolution of this matter would involve the development of hydrants that incorporate vacuum breakers and retain the automatic draining provisions essential to frost resistant design.

During the 1988 revision of ASSE Standard 1019, ASSE recognized the need to consider two types of wall hydrants for backflow protection. Specifically, test criteria were developed for frost proof and automatic draining type wall hydrants. In 1995, a request was made to revise the standard to include a third type of wall hydrant for backflow protection, which holds pressure versus relieving pressure.

The life cycle tests contained in this product performance standard represent the average expected life of the product.

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 1019 Working Group, which developed this standard revision, was set up within the framework of the Product Standards Committee of ASSE International.

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 procedures developed by the American National Standards Institute (ANSI).

2023 Product Standards Committee

Tsan-Liang Su, PhD – Chairman
Stevens Institute of Technology
Hoboken, NJ, USA

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

John Bertrand
Watts Water Technologies
Cleveland, OH, USA

Julia Briggs
NSF International
Ann Arbor, MI, USA

William Briggs Jr.
TSF Engineering
New York, NY, USA

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

William Chapin
Professional Code Consulting, LLC
Cullman, AL, USA

Steve Ducharme
Piping Industry Technical College/UA 254
Winnipeg, MB, Canada

Mark E. Fish
Zurn Elkay Water Solutions
Cary, NC, USA

Fernando Fernandez
Toto USA Inc.
Ontario, CA, USA

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

Mark Gibeault
Kohler Company
Kohler, WI, USA

Daniel Gleiberman
Sloan Valve Company
Los Angeles, CA, USA

Brandon Gunnell
Precision Plumbing Products
Portland, OR, USA

Chris Haldiman
Watts Water Technologies
Springfield, MO, USA

Kevin Hardwick
Precision Plumbing Products
Portland, OR, USA

John F. Higdon, P.E.
Merit Brass Company
Matthews, NC, USA

Mike Johnson
Delta Faucet
Indianapolis, IN, USA

Jim Kendzel
American Supply Association
Itasca, IL, USA

Anthony Menafro
State of NJ Department of Community Affairs
Trenton, NJ, USA

Bob Neff
Delta Faucet
Pendleton, IN, USA

David Orton
NSF International
Ann Arbor, MI, USA

Thomas Pitcherello
Self
Bordentown, NJ, USA

Daniel Rademacher
Viega, LLC
Butte, MT, USA

Shabbir Rawalpindiwala
Self
Kohler, WI, USA

Billy Smith
ASPE
Montgomery, AL, USA

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

Chris Wright
Ontario Pipe Trades Council
Dundalk, ON, Canda

1019 Working Group

John Bertrand
Watts Water Technologies
Cleveland, Ohio, USA

Scott Brady
Prier Products
Grandview, Mo, USA

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

Robert Burnham
Zurn Elkay Water Solutions
Erie, PA, USA

Ned Dickey
Hansgrohe
Cleveland, OH, USA

George Istefan
Watts Water Technologies
Fontana, CA, USA

Chris Haldiman
Watts Water Technologies
Springfield, MO, USA

Herb Hoeptner
Hoeptner Perfected Products
Gilroy, CA, USA

Cody Jackson
Woodford Mfg. Co.
Colorado Springs, CO, USA

Duncan Liang
CSA Group
Toronto, ON, Canada

Ramiro Mata
ASPE
Cleveland, OH, USA

Daniel Miller
Apollo
Pageland, SC, USA

John Nance
Prier Products
Grandview, MO, USA

Anthony Stanaland
Jay R. Smith Mfg. Co.
Montgomery, AL, USA

Tsan-Liang Su
Stevens Institute of Technology
Hoboken, NJ, USA

Tom Valente
CSA Group
Cleveland, OH, USA

Contents

1.0 General 1
1.1 Application 1
1.2 Scope 1
1.3 Reference Standards 2

2.0 Test Specimens and Test Laboratory 3
2.1 Sample Selection 3
2.2 Samples Tested 3
2.3 Documentation 3
2.4 Rejection 3

3.0 Performance Requirements and Compliance Testing 4
3.1 Hydrostatic Pressure Tests 4
3.2 Flow Rate and Pressure Loss 4
3.3 Deterioration at Maximum Rated Temperature and Pressure 5
3.4 Life Cycle Evaluation 5
3.5 Resistance to Bending 6
Figure 1 6
3.6 Self-Draining Capabilities 7
Figure 2 7
3.7 Low Head Backpressure 8
Figure 3 8
3.8 Outlet Pressure Release for Type A and Type B Devices 8
Figure 4 9
3.9 Backflow Prevention for Type C Devices 9
3.10 Leakage from Vent Ports 10
3.11 Cross Flow Test (Mixing Hydrant Only) 10
3.12 Backsiphonage 11
Figure 5 11
Figure 6 11
Figure 7 11
Figure 8 11
Figure 9 11
Figure 10 11

4.0 Detailed Requirements 12
4.1 Materials 12
4.2 Markings 12
4.3 Instructions 12

5.0 Definitions 13

ASSE/ANSI 1019-2023
Wall Hydrant with Backflow Protection and Freeze Resistance

1.0 General

1.1 Application

The purpose of Wall Hydrant with Backflow Protection and Freeze Resistance (herein referred to as the "device") is to provide protection of the water supply from contamination due to backsiphonage or backpressure and to protect the hydrant from damage due to freezing.

1.2 Scope

1.2.1 Description

These devices shall have a permanent means to protect against backflow due to either backsiphonage or backpressure. The backflow protection shall include a minimum of 2 mechanisms: an air inlet for preventing backsiphonage and a check valve for preventing backpressure. These devices are terminal fittings that supply water to hose connections without danger of freezing.

These devices shall be used on systems where the only source of low head backpressure comes from an elevated hose equal to or less than 10 feet (3 meters) in height. The outlet of this device shall not be subjected to more than 12 hours of continuous water pressure.

The devices shall be classified as follows:

(a) Type A: The backflow protection shall include 3 mechanisms for protection: 1) an air inlet for preventing backsiphonage, 2) a check valve for preventing backpressure and 3) a mechanism that relieves backpressure. The hose shall be removed to prevent damage to the device from freezing.

(b) Type B: The backflow protection shall include 3 mechanisms for protection: 1) an air inlet for preventing backsiphonage, 2) a check valve for preventing backpressure and 3) a mechanism that relieves backpressure and a mechanism that drains the water from the hydrant when the hose is attached and the hydrant is manually closed.
The hose need not be removed to protect the device against damage from freezing.

(c) Type C: The backflow protection shall include 2 mechanisms for protection; 1) an air inlet for preventing backsiphonage and 2) a check valve for preventing backpressure. The hose shall be removed to protect against damage to the device from freezing.

1.2.2 Sizes

The device size is specified by the inlet connection and the length of the device.

1.2.3 Connections

1.2.3.1 Outlet

The outlet connection shall be a ¾ NH garden hose connection threads complying with ASME B1.20.7.

1.2.3.2 Inlet

Inlet connections shall meet the applicable requirements of the plumbing code.

1.2. Pressure

The devices shall be designed to operate from 25 psi to 125 psi (172.4 kPa to 862 kPa).

1.2.5 Temperature Range

The devices shall be designed for flow temperatures of 33.0 °F to 140.0 °F (0.6 °C to 60.0 °C).

1.2.6 Repairability

Devices shall be designed and constructed such that after installation, repair or replacement of the elastomeric parts shall be accomplished using standard tools. Construction shall permit field service without damaging or marring the surface of the device.

1.2.7 Atmospheric Vent

Atmospheric vent(s) (air inlets) shall be of a nonstandard plumbing connection.

1.3 Reference Standards

ASME B1.20.7-1991 (R2008), *Hose Coupling Screw Threads (Inch)*

American Society of Mechanical Engineers (ASME)
Three Park Avenue
New York, NY 10016-5990
http://www.asme.org

2.0 Test Specimens and Test Laboratory

2.1 Sample Selection

Sample selection and scope of testing shall be as required by the laboratory or certification body. When a manufacturer evaluates a series of devices that are identical, except for the inlet sizes and length, the manufacturer shall furnish 3 production quality devices having the smallest inlet and longest length. For Section 3.12, details of the fouling procedure shall be provided by the manufacturer. When the lab is unable to foul the device, the listee may submit fouled samples for sections 3.12 to the lab. The listee shall supply a sample of the wire used to foul the device and a written description explaining how the device will be fouled. Wire specifications shall be provided to the lab, (i.e. gauge, material). The listee shall allow the lab to cut open the supplied samples for verification.

2.2 Samples Tested

The testing agency shall select one of each type, or model, and inlet/outlet size for full test. The tests shall be run in the order described in the standard on one device.

2.3 Documentation

Assembly, installation drawings and any other data that is needed to enable a testing agency to determine compliance with this standard shall accompany devices when submitted for examination and performance testing under this standard.

2.4 Rejection

Failure of 1 device shall result in a rejection of that type or model and size.

3.0 Performance Requirements and Compliance Testing

3.1 Hydrostatic Pressure

3.1.1 Purpose

The purpose of this test is to determine if the device withstands a hydrostatic pressure of 250 psi (1723.7 kPa) or 2 times the manufacturer's maximum rated working pressure, whichever is greater, without damage or leakage.

3.1.2 Procedure

1. Install the device in the open position on a test system with the inlet connected to an ambient water supply with shut-off valves on the inlet and the outlet.
2. Purge the device of air and then close the outlet shut-off valve.
3. Pressurize the device to 250 psi +0/-5 (1724 +0/-35 kPa) or 2 times the manufacturer's maximum rated working pressure, whichever is greater.
4. Hold the pressure for 5 minutes.

3.1.3 Criteria

Any indication of damage which prevents compliance with the remainder of this standard or external leakage shall result in the rejection of the device.

3.2 Flow Rate and Pressure Loss

3.2.1 Purpose

The purpose of this test is to determine the device's flow at a pressure drop of 25 psid (172.4 kPa).

3.2.2 Procedure

1. Install the device in the open position in a test system that is equipped with the means for measuring the rate of ambient water flow and pressure loss across the device and with a throttling valve on the outlet of the device.
2. Purge the system of air and then close the throttling valve.
3. Slowly open the throttling valve until the 25 psi +0.0/-0.5 psi (172.4 kPa +0.0/-3.5 kPa) pressure differential across the device is reached.
4. Flow for 1 minute. Record the flow.

3.2.3 Criteria

Failure to meet a minimum flow of 6.0 GPM (22.7 L/m) at a pressure differential of 25 psi (172.4 kPa) shall result in a rejection of the device.

以上内容仅为本文档的试下载部分，为可阅读页数的一半内容。如要下载或阅读全文，请访问：https://d.book118.com/468073012136006116