ASSE LEC 2009-2021

Listing Evaluation Criteria for

Backflow Preventer and Automatic Boiler or Chiller Filling Device with Pressure Regulating Management

ASSE Board Approved: January 2021
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General Information

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ASSE International
Mokena, Illinois

Foreword

This foreword shall not be considered a part of the listing evaluation criteria (LEC); however, it is offered to provide background information.

ASSE standards and LECs are developed in the interest of consumer safety.

The device is designed to be connected directly to a building's incoming potable water supply to fill from empty or refill a heating or chilled water system without the use of a pump. It accomplishes this by utilizing the pressure already generated by the incoming potable supply. The device contains integral system backflow protection as well as an electronic pressure regulator.

Device Operation

1. Incoming potable/boosted water enters the unit through the inlet filter ball valve.
2. Water passes through a check valve and through a normally closed inlet solenoid valve.
3. Water continues to pass through the manifold and through the second check valve.
4. Water now passes through a further ball valve as it enters into the heating or chilled water system.
5. Once the required system pressure is achieved the inlet solenoid valve closes and the drain solenoid valve opens.
6. The drain solenoid valve now releases the water that lies between the inlet solenoid valve and the second check valve to drain using a siphon effect to introduce an air gap within the device's manifold.
7. This cycle is repeated as and when the system requires "topping up."
8. Thereafter the device constantly monitors the connected systems operation for backflow.

Function of this device is similar to that of a device that conforms with ASSE 1012, *Performance Requirements for Backflow Preventer with an Intermediate Atmospheric Vent*.

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

This LEC does not imply ASSE's endorsement of a product which conforms to these requirements. Compliance with this LEC 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. It is recommended that these devices be maintained and serviced per the manufacturer's recommendation, filters are replaced at regular intervals per the manufacturer's instructions.

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
C.J. Erickson Plumbing Co.
Manhattan, IL

William Briggs Jr.
JB&B
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
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
Minneapolis, MN

Ramiro Mata
American Society of Plumbing Engineers (ASPE)
Mentor, OH

Robert Neff
Delta Faucet
Pendleton, IN

David Orton
NSF International
Ann Arbor, MI

Thomas Pitcherello
State of New Jersey
Bordentown, NJ

Daniel Rademacher
Plumbing Code and Design Consulting
Butte, MT

Shabbir Rawalpindiwala
Kohler Company
Kohler, WI

Billy Smith
American Society of Plumbing Engineers (ASPE)
Montgomery, AL

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

ASSE LEC 2009 Working Group

Nick Bailey
Mikrofill Systems Ltd
Redditch, Worcestershire, UK

Terry Burger
ASSE International
Cleveland, OH

David Orton
NSF International
Ann Arbor, MI

Steven Cherrington
Mikrofill Systems Ltd
Redditch, Worcestershire, UK

David Cox
Mikrofill Systems Ltd
Redditch, Worcestershire, UK

Tim Reising (non-voting)
ASSE International
Mokena, IL

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Section I

1.0 General

1.1 Application

Direct-type boiler and chiller fill valve assemblies with integral backflow preventer and system pressure regulator (herein referred to as the “device”) are used to control the inflow of water into heating and cooling systems to ensure sufficient system pressure. Devices protect the potable water supply against backflow due to backpressure and backsiphonage.

1.2 Scope

1.2.1 Description

Devices incorporate two independent check valves in series separated by a means of discharging to a drain by way of a valve and air gap, a means to automatically control flow based on a pressure range, and a means of atmospheric venting to allow drainage. Devices shall only be installed in the Inlet vertical up- outlet vertical down (VUVD) orientation. Check valves shall be force-loaded to a normally closed position.

NOTE: *A device conforming with Figure 1 uses a configuration similar to an ASSE 1012 device, with additional subcomponents. The combination of check valves C1 and C2 along with solenoid S2, the float vent valve, and air gap comprise an assembly similar to a backflow preventer with intermediate atmospheric vent.*

1.2.2 Minimum Flow Capacity

The device shall be able to flow at minimum 3.7 US gal/min (14 l/min) at a flowing pressure of 30 psi (207 kPa).

1.2.3 Pressure Range

The device shall be designed for a maximum incoming line pressure of 100 psi (689 kPa).

1.2.4 Temperature Range

The device shall be designed for a maximum incoming water temperature of 140 °F (60 °C).

1.2.5 Size and Connections

Connections shall be in compliance with the standards referred to in local plumbing codes.