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American Society of Sanitary Engineering

Performance Requirements for

Reduced Pressure Principle Backflow Preventers and Reduced Pressure Principle Fire Protection Backflow Preventers

An American National Standard

General Information

No product may be said to be ASSE approved 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 Seal are available from ASSE's 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.

American Society of Sanitary Engineering
Westlake, Ohio

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.

In potable water supply systems, there are many and varied conditions which can develop to cause a reversal of the normal direction of flow (backflow) in the water supply lines. By this reversal of direction of flow, water from other than the intended source can be caused to enter and contaminate the potable water in the supply lines and the potable water source.

There are two basic types of backflow, identified by the two conditions that cause it:
(1) Back pressure backflow is a reversal of the normal direction of flow in the pipe line due to a condition which causes the pressure in the system being supplied to become greater than that in the supply line, the system pressure being always above atmospheric.
(2) Backsiphonage backflow is a reversal of the normal direction of flow in the pipe line due to a negative pressure (vacuum) being created in the supply line with the backflow source subject to atmospheric pressure.

The type of occupancy of the premises, the design and construction of the system, and the manner in which it is used are major influences on the possible incidence of backflow. Consequently the degree of the hazard to which persons may be exposed varies from discomfort and minor illness to fatal, if the backflow of contaminants into the potable water system is not completely prevented.

Due to the many variables in systems, devices of different performance characteristics are needed, each tailored to the system and its protection needs. This standard covers two (2) types of devices which are identified as Reduced Pressure Principle Backflow Preventer (RP) and Reduced Pressure Principle Fire Protection Backflow Preventers (RPF). The RP and the RPF are identical in their backflow protection. The RPF, which was added to this standard in 1999, has specific performance requirements relating to their use on fire protection systems.

This standard is a composite of the most practical and effective behavioral characteristics for a device of this type drawn on the experience of engineers, manufacturers, public health officials and others who are knowledgeable in this field and who have the responsibility of protecting our potable water supplies.

Performance standards for systems and devices must be reviewed periodically and upgraded as research and field conditions and experience suggest. This is the policy of the American Society of Sanitary Engineering, the period being approximately every three to seven years

depending upon the class of product involved. Between such reviews, the Standards Committee works with interested groups in obtaining information for study and evaluation for acceptance in upgrading a standard.

Although many of the material specifications are detailed within Section IV of this Standards, 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 Standards Committee of the American Society of Sanitary Engineering.

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

This standard does not imply ASSE'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 procedures developed by the American National Standards Institute (ANSI).

This edition of the standard was approved by the ASSE Board of Directors on July 24, 2009, as an ASSE standard.

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Reduced Pressure Principle Backflow Preventers and Reduced Pressure Principle Fire Protection Backflow Preventers

Section I

1.0 General

1.1 Application

The purpose of a Reduced Pressure Principle Backflow Preventer and a Reduced Pressure Principle Fire Protection Backflow Preventer (herein referred to as the “assembly”) is to keep contaminated water from flowing back into a potable water distribution system when some abnormality in the system causes the pressure to be temporarily higher in the contaminated part of the system than in the potable water supply piping.

1.2 Scope

1.2.1 Description

This standard applies to two types of backflow prevention assemblies identified as:
(a) Reduced Pressure Principle Backflow Preventers (RP); and
(b) Reduced Pressure Principle Fire Protection Backflow Preventers (RPF).
These assemblies consist of two (2) independently-acting check valves, internally force loaded to a normally closed position and separated by an intermediate chamber (or zone) in which there is a hydraulically operated relief means for venting to atmosphere, internally force loaded to a normally open position. These assemblies are designed to operate under continuous pressure conditions. The assembly shall include two (2) properly located, tightly closing shut-off valves per Section 1.3.2.7; and properly located test cocks per Section 1.3.2.5.

This standard also applies to Manifold Reduced Pressure Principle Backflow Assemblies consisting of two or more complete Reduced Pressure Principle Backflow Preventers in parallel. The assemblies do not need to be of the same pipe size. The manifold size shall be identified by the single inlet and outlet of the manifold reduced pressure principal backflow assembly. Manifold Reduced Pressure Principle Backflow Assemblies shall include line-sized shut-off valves on each inlet and outlet of the assemblies making up the manifold.

1.2.2 Size Range

Connection pipe sizes shall be in accordance with Table 1.