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Document Name: SSE 1025: Diverters for Plumbing Faucets with Hose Spray, Anti-Siphon Type, Residential Applications

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American Society of Sanitary Engineering

Performance Requirements for

Diverters for Plumbing Faucets with Hose Spray, Anti-Siphon Type, Residential Applications

General Information

No product may be said to meet or be in compliance with an A.S.S.E. Standard unless the manufacturer has applied to the A.S.S.E., has had his product tested by an officially A.S.S.E. recognized independent laboratory, according to the applicable A.S.S.E. Standard, and when the product has passed the test, displays the A.S.S.E. Seal on the product. Instructions for receiving the authorization to display the Seal are available from A.S.S.E. Central Office.

Organizations wishing to adopt or list any A.S.S.E. Standard should print the A.S.S.E. Standard Number on the cover page first and in equal or large type to that of the adopting or listing organization.

American Society of Sanitary Engineering
Westlake, Ohio

Foreword

It is a principal objective of the American Society of Sanitary Engineering to work with manufacturers of plumbing oriented products in the development of product performance standards which are directed to health and safety of the public in general.

When assistance was requested for a standard for Diverters for Faucets, the A.S.S.E. Standards Committee responded promptly to implement this project.

The cooperation of representatives of several different segments of the plumbing industry working together, contributed broad expertise and experience to the project. Represented were manufacturers, health and inspection officials, master plumbers and others with knowledge of the problems related to the products and intended purposes.

The text as recited herein was studiously developed around factors pertinent to the health and safety of the users as they were captured from the cooperating subcommittee personnel.

This standard has been accepted and approved by the A.S.S.E. Standards Committee which action has been concurred in by the Board of Directors of the Society.

The standard has now been issued as an official A.S.S.E. Standard under title number 1025, date of February, 1976.

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1.1 Scope and Purpose

1.1.1 Scope

The diverters covered by this performance standard are complete and independent components of plumbing faucets intended for use in sink type plumbing fixtures to which is connected a flexible hose and spray assembly. The complete faucet being connected to both the potable hot and cold water supply lines. Several diverter styles may be involved to satisfy the requirements of different faucets and will be considered within this scope if they are in full compliance with the requirements of Section II.

1.1.1.1 Service Water Pressure

Diverter units shall be designed for use in water supply systems of at least 100 p.s.i. (690 kPa) line pressure.

1.1.1.2 Service Water Temperature

Units shall be suitable for exposure to water temperatures up to at least 160°F (71°C).

1.1.1.3 Size

Diverter shall be of a size suitable for installation within the faucet body or faucet spout in which it is to be installed.

1.1.1.4 Minimum Flow Rate

Flow rate shall be not less than 1.5 GPM (0.095 L/s) under the conditions prescribed in 2.4.1.

1.1.2 Purpose

The purpose of this standard is to provide reasonable guide lines and a standard of uniformity for the performance of these diverter products. To provide means of protecting the potable water supply from contamination due to backflow or backsiphonage of the liquid contents of plumbing fixtures. To provide means for diverting the water supply from the faucet spout to the hose spray outlet when the faucet is in use, and when the trigger mechanism of the spray head is activated.

1.2 General - Construction.

1.2.1 Moving Parts Freedom
Care in the design and manufacture must be exercised to prevent sticking, galling or the trapping of foreign matter which will interfere with the essential movement of sliding or rotating parts.

1.2.2 Noise - Objectionable
The water channels shall be of such design that no objectionable noise is produced under normal service conditions.

1.2.2.1 Unstable Flow, Pulsation
The design shall be such that no flow pulsation or chatter will be produced when operated under normal service conditions.

1.3 Material

1.3.1 The use of dissimilar metals in close proximity shall be close to each other in the electrolytic scale to minimize galvanic corrosion.

1.3.2 All material in contact with the water flowing through the unit which can create a health hazard are excluded under this standard.

1.4 Instructions

1.4.1 When diverters are supplied to faucet manufacturers for installation in their faucets, recommendations for installation shall be supplied by the diverter manufacturer. The recommendations shall be such that when followed, the diverter will perform as prescribed by this standard.

1.5 Marking

1.5.1 The diverter units shall be indelibly identified with markings which are the practice of the manufacturer and which clearly and distinctly identifies each type and/or model and size of device.

1.6 Number of Units Required for Testing

1.6.1 The manufacturer shall furnish from production stock, three (3) units from which the testing agency shall select one at random for full requirements testing. If this unit fails, the model and/or type and size shall be rejected and no further tests of this model and/or type and size shall be made until corrected by the manufacturer.

1.7 Diverter Units

Diverter units shall be in full compliance with all performance requirements of Section II of this standard.

Section II

2.0 Performance and Testing

2.1 Diverter Test Structure

2.1.1 Diverters shall be tested individually in a housing, or faucet structure, which corresponds to the recommended dimensions for which the diverter is designed.

2.2 Resistance to Hot Water

2.2.1 The diverter unit shall be capable of withstanding, for short periods of flow, a water temperature of at least 160°F (71°C) without any deterioration which will cause it to fail.

Method of Test
Connect the unit to a suitable source of water supply and with the pressure regulated to 60 p.s.i., (414 kPa), raise the water temperature to 160°F (71°C) and operate the unit, first flowing water through the spout and then the spray. Repeat this procedure for at least ten times. The duration of flow of each test being not less than three minutes, and observe for unstable flow, pulsation, chatter, and/or marked decrease of flow rate through spout or spray outlet. Then increase the pressure to 100 p.s.i., (690 kPa), and repeat the procedure.

2.3 Hydrostatic Test

2.3.1 The diverter shall withstand a water pressure of 150 p.s.i. (1,034 kPa) with affecting its prescribed service performance.

Method of Test
Connect the unit to an adequate water pressure source. Purge the system of air, then raise the water pressure to 150 p.s.i. (1,034 kPa) and hold for a minimum of three minutes. Repeat this procedure two times for a total of three. After each pressure application, run water through the unit at any water pressure below 100 p.s.i. (690 kPa) and make visual and audible observation of performance.

2.4 Minimum Flow

2.4.1 The diverter shall not restrict the flow to less than 1.5 GPM (0.095 L/s), at the faucet spout outlet, without aerator installed, or 0.5 GPM (0.032 L/s), at the hose spray outlet, when the spray is activated, with 20 p.s.i. (138 kPa) supply pressure.

Method of Test
Connect the unit to a suitable source of water supply and regulate the pressure to 20 p.s.i. (138 kPa). Flow water through the spout outlet of the diverter and measure, by volume or rate, and then activate mechanism to divert water to the spray outlet of the diverter and measure by volume or rate.

2.5 Spout Leak

2.5.1 The diverter shall not permit more than 0.3 GPM (0.019 L/s) water leak at the faucet spout outlet, with or without spout aerator installed when the hose spray is activated.

Method of Test
Connect the unit to a suitable source of water supply and regulate the pressure to 20 p.s.i. (138 kPa). Flow water through the spout outlet of the diverter and then activate the mechanism to divert water through the spray outlet of the diverter. With water flowing through the spray outlet, measure the water leak or flow, by volume or rate, discharging from the spout outlet. Raise the supply pressure to 100 p.s.i. (690 kPa) and repeat the procedure.

2.6 Back-Siphonage

2.6.1 There shall be no backsiphonage of water through the spray or hose when the control valve of the spray is defective, or open, and a vacuum of 0 to 25 inches (0.64 meter) mercury column is applied to the inlet of the faucet.

Method of Test
Connect the unit to a suitable source of water supply. Downstream of the cold water supply control valve, install a pipe tee and a suitable ball valve and pipe to an adequate source of vacuum. Remove the spray head and install a sight glass of 1/2" I.D. (12.7 mm) to the hose spray outlet. With the valve in the vacuum line closed, flow cold water through the unit for approximately one minute and then close the pipe line water supply valve and permit water to drain from the unit. After water has drained from the unit, immerse the terminal end of the sight glass in a reservoir of water at a level below that of the test unit. With the pipe line water supply valve still closed, open the vacuum to 25 inches (0.64 meters) mercury column and then reduce it to atmospheric pressure.

Repeat this test three times, then apply the vacuum of 25 inches (0.64 meters) rapidly by opening and closing the vacuum valve rapidly. Repeat five times. There must be no rise of water in the sight glass. A movement of the meniscus within the sight glass is not considered a rise of water in the glass.

Section III

3.0 Definitions

Attachments
See Spray Units; Detergent Brush.

Backflow
A reversal of the normal and intended direction of flow of water in a pipeline. (See back pressure and backsiphonage backflow.)

Backflow Preventer, water supply
A device or means to prevent backflow in pipe lines flow in pipe lines.

Back Pressure
A pressure in the supplied system which, for some cause, becomes greater than the supply pressure. (In this text, it is pressure above atmospheric.)

Back Pressure Backflow
A reversal of the normal and intended direction of flow caused by back pressure.

Backsiphonage
The application of the siphon principle in a water supply line which produces a flow of water in the direction opposite that normally produced by the force of gravity.

Backsiphonage Backflow
(Generally referred to as only backsiphonage) A condition in a piping system, or portion of a system, deployed in the form of a simple siphon in which the supply pressure falls to less than atmospheric and the supplied system pressure becomes atmospheric, the activating pressure.

Cross-Connection, non-potable
Any connection to a potable water supply system through which potable water is supplied to a service outlet through which contaminants can enter the potable water supply lines by back pressure or backsiphonage backflow.

Detergent Brush
A hose and brush assembly with detergent supply for cleaning utensils and other services for attachment to a faucet with a built-in diverter.

Interconnection
A cross connection between two separate systems. (i.e.: A vendor's system and a user's system)

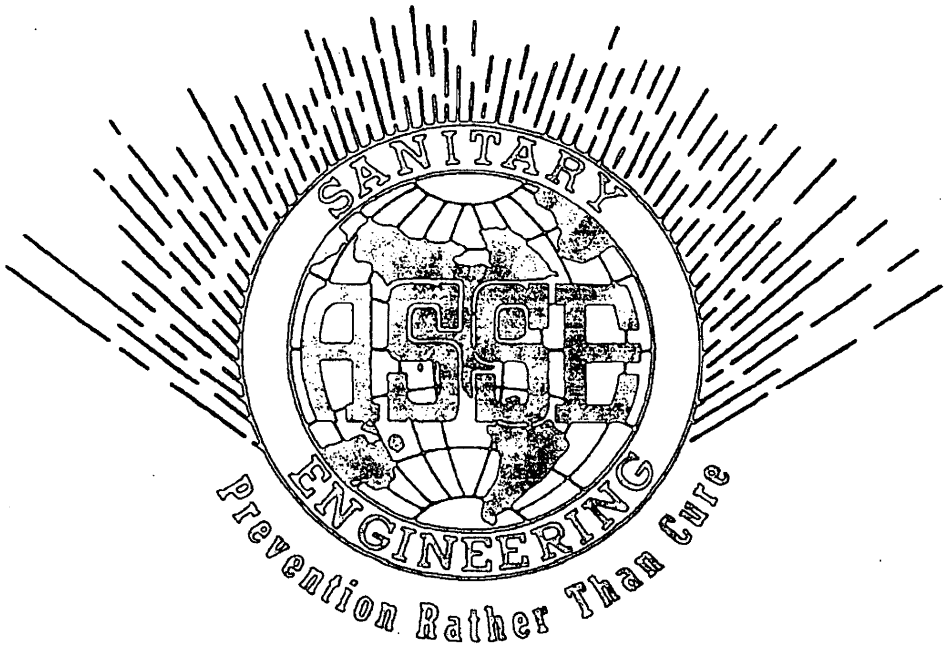
Diverter
A device in a faucet by means of which water flow can be automatically directed from the faucet spout to a spray or other attachment.

Faucet
A device at the end of a water pipe by means of which water can be drawn from or held within the pipe.

Faucet Spout
The tubular like end of a faucet through which water flows into open space when the faucet is opened.

Spray Unit
An assembly of a flexible hose and spray head for attachment to a faucet with a built-in diverter.

Siphon
A tube or conduit in the form of an inverted U by means of which water can be caused, by atmospheric pressure, to flow from a vessel up over a barrier at an elevation above the level of the water in the vessel and down into another vessel at a lower level.



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