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**Document Name:** ASSE 1006: Plumbing Requirements for Residential Use  
(Household) Dishwashers

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**Standards Body:** American Society of Sanitary Engineering



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WASHINGTON, D.C.



*American Society of Sanitary Engineering*

**Performance Requirements for  
Residential Use  
Dishwashers**



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It is recommended that all devices designed for plumbing systems, especially those which pertain to public health and safety, should be installed consistent with local codes by qualified and trained professionals.

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Bay Village, Ohio  
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# Foreword

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The development of this sanitation performance standard was prompted by awareness that public health can be affected by the connection of domestic appliances to the domestic water supply and sanitary drainage systems.

This provides a basis for evaluating the adequacy of appliance design and performance to insure sanitary conditions and to protect the public from health hazards that could result from improper design or manufacture.

The performance criteria presented are based on extensive engineering research and broad field experience on protection of the potable water supply and safe discharge of wastes into the sanitary plumbing system. Engineers and technicians representing manufacturer's, public health officials, plumbing contractors, inspection agencies and plumbing testing laboratories contributed the technical expertise and experience necessary to develop a meaningful and scientifically sound evaluation method that takes into account conditions that could adversely affect the sanitary performance of these appliances.





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# Residential Use Dishwashers

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## Section I

### 1.0 Scope, Purpose, and General Requirements

#### 1.1 Scope

This standard applies to residential use (household) type dishwashers, both front loading and top loading, requiring connection to the potable water supply and discharging into the plumbing drainage system.

#### 1.2 Purpose

The purpose of this standard is to supply manufacturers, plumbing enforcement agencies and others with criteria for performance of the appliance when connected to a system of plumbing and the methods of test for determining that performance.

#### 1.3 General Requirements

##### 1.3.1 Machine Inspection

All parts of the potable water supply assembly of the dishwasher through the discharge terminal point of the air gap fitting, or other backflow preventer, shall be of non-toxic, corrosion resisting materials consistent with plumbing practices. Harmful substances shall not be imparted to articles processed by the dishwasher from materials used in its construction. (See 2.2)

##### 1.3.2 Flushing Means

The dishwasher shall provide a means of automatic flushing of all surfaces exposed to wash water and an automatic means of removing residual liquid except for that remaining in the sump, discharge conduits and pump. (See 2.3.1)

##### 1.3.3 Soil Accumulation

The washing chamber and all components within it shall be designed to minimize the accumulation of soil. (Exceptions are screens, filter, etc., specifically designed for retention and subsequent removal of soil.) (See 2.3.1)

##### 1.3.4 Air Gaps

Potable water supplies to the unit shall be protected against contamination by means of air gaps or other acceptable devices. This requirement applies to the supplying of potable water to all accessories such as dispensers and injectors as well as the washing machine.

##### 1.3.5 Water Supply Systems

The water supply system as supplied with the dishwasher shall be designed to operate without malfunction when connected to a water system at a static pressure of 861.9 kPa (125 p.s.i.) and a temperature of 71.1°C (160°F). Portions of the system subjected to cold water only, where applicable, shall be tested at 37.8°C (100°F). (See 2.3.1)

### **1.3.6 Nameplate Specifications**

The trade name, model designation, identifying numbers, and the manufacturer's or private labeler's address shall be legibly displayed on a permanently affixed nameplate on each dishwasher. (See 2.2)

### **1.3.7 Nameplate Location**

The nameplate shall be readily visible after the dishwasher has been installed as intended without the necessity of moving the unit.

### **1.3.8 Water Control**

The water supply system shall not spill, spray or leak except where provided by design as a beneficial function. (See 2.3.1)

### **1.3.9 Installation and Operational Instructions**

Installation and operational instructions shall be provided with each unit. (See 2.1)

## **Section II**

## **2.0 Test Procedures**

### **2.1 Installation**

Before installing or operating the dishwasher, review the installation instructions and operational literature accompanying the dishwasher.

### **2.2 Machine Examination**

Examine the dishwasher for conformance with 1.3.1, 1.3.3, 1.3.6 and 1.3.7.

### **2.3 Initial Cycle**

Install the dishwasher on a level surface, connected to a water supply and drainage system in accordance with the manufacturer's installation instructions. Operate the machine through a regular cycle with water only for familiarization.

**2.3.1** Check for conformance with 1.3.2, 1.3.5 and 1.3.8 during a normal cycle of operation at a static pressure of 861.9 kPa (125 p.s.i.).

**2.3.2** Observe the water supply system for conformance with 1.3.8 during a regular cycle of operation.

### **2.4 Preparation and Test**

The following preparations shall be made for the test prescribed in 2.4.6:

**2.4.1** Remove the automatic fill valve closing mechanisms (diaphragm, plunger, etc., except for flow washers, if any). If specified by the manufacturer, the automatic fill valve may be bypassed.

**2.4.2** Control the water supply to the dishwasher with a manually operated shut-off valve located upstream of the automatic fill valve.

**2.4.3** Fill the unit under test to the flood level, as defined in 3.3, with water and cleaning agent which meet the following specifications.

**2.4.3.1 Water:**

Temperature - 71.1°C (160°F)

Hardness - 170 ppm (10 grains/gallon) maximum

Pressure - static (50 p.s.i.)

**2.4.3.2 Cleaning Agent**

Type - A cleaning agent normal to the use of dishwashers. (Examples include: Dishwasher All, Cascade, Electra/Sol, Calgonite and others.)

Amount - Charge with the maximum amount the dispenser can accommodate when level full. When dispensers are not provided the manufacturer's recommendation shall be followed.

**2.4.4** Test units without loading with dishes.

**2.4.5** Connect a vacuum tank with a minimum capacity of 100 gallons (378.5 liters) equipped with a vacuum pump, vacuum gauge and shut-off valve to the inlet side of the water inlet(s). If specified by the manufacturer, the vacuum tank may be connected to the inlet side of the air gap.

**2.4.6** After filling in accordance with 2.4.3, operate the dishwasher in a normal cycle and apply the vacuum, specified in 2.4.7.1.

**2.4.7** Check for the effect on air gaps or backflow prevention devices.

**2.4.7.1** With the vacuum tank evacuated to 84.4 kPa (25 inches mercury) vacuum, stop the pump and rapidly open the shut-off valve in the vacuum line.

**2.4.7.2** When the tank pressure has been reduced to 0 kPa (0 inch mercury) vacuum and without losing the shut-off valve in the vacuum line, restart the vacuum pump and operate to a minimum of 84.4 kPa (25 inches mercury) mercury vacuum or to the limit of the pump, whichever comes first.

## **2.5 Dispensers or Injectors**

When dispensers or injectors are components of the equipment (see 1.3.4), the test prescribed in 2.4 are to be applied to the potable water supply systems serving these components.

## **2.6 Test Results**

Any indications that suds or liquids have contaminated the potable water supply systems, or have been forced across the air gap or other protective devices as a result of negative pressure, during the test prescribed in 2.4.6 indicates failure to provide the protection required in 1.3.4. It is suggested that a sight glass be used to determine failure.

NOTE: It is recommended that the dishwasher be discharged to the drainage system indirectly and that the unit be listed or approved by Underwriters Laboratories, Inc., or other electrical testing agencies, as applicable.

## Section III

### 3.0 Definitions

Definitions not found in this section are located in the latest edition of the Plumbing Dictionary published by the A.S.S.E.

#### **Air Gap (Water Distribution System)**

The unobstructed vertical distance through the free atmosphere between the lowest opening of any pipe or faucet supplying water to a tank, plumbing fixture or other device, and the flood level rim of the receptacle receiving the water.

#### **Backflow**

The flow of water or other liquids, mixtures or substances into the distributing pipes of a potable supply of water from any source or sources other than its intended source. Back-siphonage is one type of backflow.

#### **Backflow Preventer**

A device or means to prevent backflow into the potable water system.

#### **Back-Siphonage**

The siphoning back of used, contaminated or polluted water or other substances from a plumbing fixture or vessel, or other source, into the water supply pipe due to negative pressure in such a supply pipe.

#### **Flood Level**

The lowest point in a receptacle from which water overflows.

#### **Household Dishwasher**

An appliance which, with the aid of water, washes, rinses and dries (where drying process is included) dishware, glassware and cutlery, and most cooking utensils by chemical, mechanical and/or electrical means and discharges to the plumbing drainage system.

#### **Indirect Connection**

The connection by air gap (drainage) or air break rather than a direct connection to the drainage system.

#### **Regular Cycle**

The sequence of dishwasher operations for regular or normal soils, as indicated by the manufacturer.