



Standard Specification for Commercial Dishwashing Machines (Stationary Rack, Dump Type) Chemical Sanitizing¹

This standard is issued under the fixed designation F953; the number immediately following the designation indicates the year of original adoption or, in the case of revision, the year of last revision. A number in parentheses indicates the year of last reapproval. A superscript epsilon (ε) indicates an editorial change since the last revision or reapproval.

1. Scope

1.1 This specification covers manually fed, spray-type, stationary rack, automatically controlled, dump type, chemical sanitizing commercial dishwashing machines.

1.2 The values stated in inch-pound units are to be regarded as standard. The values given in parentheses are mathematical conversions to SI units that are provided for information only and are not considered standard.

1.3 The following safety hazards caveat pertains only to the test methods portion, Section 7, of this specification: *This standard does not purport to address all of the safety concerns, if any, associated with its use. It is the responsibility of the user of this standard to establish appropriate safety, health, and environmental practices and determine the applicability of regulatory limitations prior to use.*

1.4 *This international standard was developed in accordance with internationally recognized principles on standardization established in the Decision on Principles for the Development of International Standards, Guides and Recommendations issued by the World Trade Organization Technical Barriers to Trade (TBT) Committee.*

2. Referenced Documents

2.1 ASTM Standards:²

[A240 Specification for Chromium and Chromium-Nickel Stainless Steel Plate, Sheet, and Strip for Pressure Vessels and for General Applications](#)

[A276 Specification for Stainless Steel Bars and Shapes](#)

[A554 Specification for Welded Stainless Steel Mechanical Tubing](#)

[A582/A582M Specification for Free-Machining Stainless Steel Bars](#)

¹ This specification is under the jurisdiction of ASTM Committee F26 on Food Service Equipment and is the direct responsibility of Subcommittee F26.01 on Cleaning and Sanitation Equipment.

Current edition approved Oct. 1, 2019. Published November 2019. Originally approved in 1985. Last previous edition approved in 2014 as F953 – 14. DOI: 10.1520/F0953-19.

² For referenced ASTM standards, visit the ASTM website, www.astm.org, or contact ASTM Customer Service at service@astm.org. For *Annual Book of ASTM Standards* volume information, refer to the standard's Document Summary page on the ASTM website.

[B127 Specification for Nickel-Copper Alloy \(UNS N04400\) Plate, Sheet, and Strip](#)

[F760 Specification for Food Service Equipment Manuals](#)

[F1696 Test Method for Energy Performance of Stationary-Rack, Door-Type Commercial Dishwashing Machines](#)

2.2 OSHA Standard:³

[Title 29, Code of Federal Regulations \(CFR\), Chapter XVII, Part 1910](#)

2.3 NSF Standards:⁴

[NSF/ANSI 3 Commercial Warewashing Equipment](#)

[NSF/ANSI 29 Detergent and Chemical Feeders for Commercial Spray-Type Dishwashing Machines](#)

[NSF Listing Food Equipment](#)

2.4 UL Standards:⁵

[UL 921 Commercial Dishwashers](#)

[UL 969 Marking and Labeling Systems](#)

2.5 ASSE Standard:⁶

[Std. No. 1004 Performance Requirements for Backflow Prevention Requirements for Commercial Dishwashing Machines](#)

3. Terminology

3.1 Definitions:

3.1.1 *commercial dishwashing machines*—machines that uniformly wash, rinse, and sanitize eating and drinking utensils. The machines shall be capable of removing physical soil and sanitizing multiple use eating and drinking utensils. The dishwashing machines normally consist of the following principal parts: Legs, wash chamber hood, tank, doors, spray assemblies, pumps, motors, controls, piping, valves, chemical sanitizing equipment, and accessories.

³ Available from Superintendent of Documents, Government Printing Office, Washington, DC 20402.

⁴ Available from NSF International, P.O. Box 130140, 789 N. Dixboro Rd., Ann Arbor, MI 48113-0140.

⁵ Available from Underwriters Laboratories (UL), Corporate Progress, 333 Pfingsten Rd., Northbrook, IL 60062.

⁶ Available from ASSE International, 18927 Hickory Creek Drive, Suite 220 Mokena, Illinois 60448.

4. Classification

4.1 *Types, Styles, Classes, and Groups*—Dishwashing machines shall be of the following types, styles, classes, size, and capacity groups as specified:

4.1.1 *Type I*—Straight-through model, 34 in. (863.6 mm) nominal table height. This machine is used in line with table on each side.

4.1.1.1 *Style A*—Single rack.

4.1.1.2 *Size and Capacity*, 19-³/₄ by 19-³/₄-in. (501.6 by 501.6 mm) (nominal) racks at minimum of 36 racks per hour.

4.1.1.3 *Style B*—Double rack.

4.1.1.4 *Size and Capacity*, 19-³/₄ by 19-³/₄-in. (501.6 by 501.6 mm) (nominal) racks at minimum of 72 racks per hour.

4.1.2 *Type II*—Corner model, 34 in. (863.6 mm) nominal table height. This machine is used in corner placement forming a 90° table on each side.

4.1.2.1 *Style A*—Single rack.

4.1.2.2 *Size and Capacity*, 19-³/₄ by 19-³/₄-in. (501.6 by 501.6 mm) (nominal) racks at minimum of 36 racks per hour.

4.1.2.3 *Style B*—Double rack.

4.1.2.4 *Size and Capacity*, 19-³/₄ by 19-³/₄-in. (501.6 by 501.6 mm) (nominal) racks at minimum of 72 racks per hour.

4.1.3 *Type III*—Under counter, front load. This machine may be installed under counters.

4.1.3.1 *Style A*—Single rack.

4.1.3.2 *Size and Capacity*, 19-³/₄ by 19-³/₄-in. (501.6 by 501.6 mm) (nominal) racks at minimum of 21 racks per hour.

5. Ordering Data

5.1 Purchasers should select the preferred options permitted herein and include the following information in the procurement document:

5.1.1 Title, number, and date of this specification.

5.1.2 Type I or II straight through, corner machine, or Type III under counter (see 4.1).

5.1.3 Noise level requirements, if other than specified (see 6.2).

5.1.4 When a service-supply valve is required (see 9.3.3).

5.1.5 Special electrical power supply characteristics. Specify current, voltage, phase, frequency (see 9.4). Standard electrical characteristics are 115 V, single phase, 60 Hz.

5.1.6 When detergent feeder is required.

5.1.7 When rinse agent feeder is required.

5.1.8 When energy consumption profiles, water consumption profiles, or productivity profiles are desired (see 7.3).

5.1.9 Manufacturer's certification, when required (see Section 10).

6. Performance Requirements

6.1 *Performance Standards Compliance*—Dishwashing machines shall conform to the requirements of OSHA Title 29, UL 921, and NSF/ANSI 3, and the detergent, rinse agent, and sanitizer feeders shall comply with NSF/ANSI 29.

6.2 *Noise Level*—Unless otherwise specified, the noise level of the dishwasher, when operating, exclusive of loading, unloading, and servicing, shall not exceed 80 dBA at loading and unloading stations, measured at 5 ft above floor level, and 2 ft from the machine.

6.3 *Performance Testing*—When specified in the contract or purchase order, performance testing shall be performed in accordance with Test Method F1696.

7. Test Methods

7.1 *Operational*—Each machine shall be thoroughly tested in accordance with the manufacturer's instructions to determine compliance with the requirements of NSF/ANSI 3 and UL 921.

7.2 *External Leakage*—No leakage shall occur when tested at pressures up to 125 % of the manufacturer's recommended supply line pressure.

7.3 *Performance Profiles*—See Test Method F1696.

8. Quality Assurance

8.1 Unless otherwise specified in the contract or purchase order, the manufacturer is responsible for the performance of all requirements as specified herein. Except as otherwise specified in the contract or order, the manufacturer may use his own or any other facilities suitable for the testing of the machine requirements specified herein.

9. Physical Requirements

9.1 *Materials*—All materials shall be specified herein. Whenever specific materials are referenced, it is understood that the use of materials and material thickness demonstrated to be equally satisfactory for their intended purpose are acceptable. Materials used shall be free from defects that would adversely affect the performance or maintainability of individual components of the overall assembly. The dishwashing machines shall meet the material requirements of NSF/ANSI 3.

9.1.1 *Corrosion-Resistant Steel*—Corrosion-resistant steel shall conform to requirements of any 300 series stainless steels specified in 2.1.

9.1.2 *Corrosion-Resisting Material*—Corrosion-resisting material is other than corrosion-resistant steel that is equivalent in the dishwasher application.

9.1.3 *Nickel-Copper Alloy*—Nickel-copper alloys shall conform to the requirements of Specifications B127, A582/A582M, A554, A276, and A240.

9.2 *Construction*—The dishwasher shall conform to the design and construction requirements of NSF/ANSI 3. The dishwashing machine shall be complete so that when connected to the specified source of power, water supply, drain and detergent, sanitizer, and rinse agent feeders, as applicable, the unit can be used for its intended function. Dishwashers shall be rigid, quiet in operation, free from objectionable vibration, and so constructed as to prevent objectionable splashing of water or overflow of water to the outside of the machine. Parts requiring adjustment or service, or both, shall be readily accessible. The machine shall wash dishes by means of a water and detergent solution pumped from the tank, and shall rinse the dishes with a pumped, recirculated fresh water sanitizer solution. Provisions shall be made to automatically fill the tank directly from the regular hot water supply. The wash, dwell, and sanitizing rinse cycles shall be automatically controlled. A light shall be provided to indicate when the machine is in operation. Machines shall be provided with tracks of corrosion-resistant steel