



Designation: F 1022 – 95 (Reapproved 2000)

Standard Specification for Chemical Sanitizing Commercial Dishwashing Machines, Recirculated Wash, Fresh Water Rinse Type¹

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1. Scope

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

NOTE 1—Several standards that apply generally to the product described in this specification are listed in the Appendix X1.

1.2 The values stated in inch-pound units are to be regarded as the standard. The SI units in parentheses are provided for information only.

1.3 The following precautionary caveat pertains only to the test method portion: Section 13, 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 and health practices and determine the applicability of regulatory limitations prior to use.*

2. Referenced Documents

2.1 ASTM Standards:

- A 167 Specification for Stainless and Heat-Resisting Chromium-Nickel Steel Plate, Sheet, and Strip²
- A 554 Specification for Welded Stainless Steel Mechanical Tubing³
- A 582 Specification for Free-Machining Stainless and Heat-Resisting Steel Bars, Hot-Rolled or Cold-Finished⁴
- B 127 Specification for Nickel-Copper Alloy (UNS NO 4400) Plate, Sheet, and Strip⁵
- F 760 Specification for Food Service Equipment Manuals⁶

2.2 OSHA Standard:

- Title 29, Code of Federal Regulations (CFR) Chapter XVII, Part 1910.⁷

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.

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² Annual Book of ASTM Standards, Vol 01.03.

³ Annual Book of ASTM Standards, Vol 01.01.

⁴ Annual Book of ASTM Standards, Vol 01.05.

⁵ Annual Book of ASTM Standards, Vol 02.04.

⁶ Annual Book of ASTM Standards, Vol 15.07.

⁷ Code of Federal Regulations, available from Superintendent of Documents, Government Printing Office, Washington, DC 20402.

2.3 NSF International Standards:

- NSF No. 3 Spray Type Dishwashing Machines⁸
- NSF No. 5 Commercial Hot Water Generating Equipment⁸
- NSF No. 14 Plastic Piping System Components and Related Materials⁸
- NSF No. 29 Detergent/Chemical Feeders for Commercial Spray-Type Dishwashing Machines⁸
- NSF Criteria C-2 Special Equipment and/or Devices⁸
- NSF Official Listing of Food Service Equipment⁸
- 2.4 Underwriters Laboratories, Standard:
 - UL 921 Commercial Electrical Dishwashers⁹
- 2.5 American Society of Sanitary Engineering Standards:
 - ASSE 1004 Dishwashers¹⁰

3. Terminology

3.1 Definitions of Terms Specific to This Standard:

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

4. Classification

4.1 *General*—Dishwashing machines shall be of the types, styles, classes, size, and capacity group as specified in 4.2-4.4. All dishwashing machines of the same classification, model, or material list designation furnished with similar options under a specific purchase order shall be identical to the extent necessary to ensure interchangeability of component parts, assemblies, accessories, and spare parts.

4.2 Types:

4.2.1 *Type I (Straight-Through Model)*— This machine is used in line with the table on each side.

⁸ Available from NSF International, P. O. Box 1468, Ann Arbor, MI 48106.

⁹ Available from Underwriters Laboratories, Inc., 333 Pfingsten Rd., Northbrook, IL 60062.

¹⁰ Available from American Society of Sanitary Engineering, P.O. Box 9712, Bay Village, OH 44140.



4.2.2 *Type II (Corner Model)*—This machine is used in corner placement forming a 90° (1.57 rad) side.

4.3 *Styles and Classes:*

4.3.1 *Style 1 (Steam Heated)*—Low pressure steam (10 to 15 psi (68.9 to 103.4 kPa)) flowing pressure at point of machine connection:

4.3.1.1 *Class A*—Injector.

4.3.1.2 *Class B*—Heat exchange coil.

4.3.2 *Style 2 (Electrically Heated).*

4.3.3 *Style 3 (Gas Heated):*

4.3.3.1 *Class C*—Natural gas.

4.3.3.2 *Class D*—LP gas.

4.4 *Size and Capacity*—Racks of 19¾ in. (502 mm), nominal, at a minimum of 50 racks per hour.

5. Ordering Information

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

5.1.1 Title, designation, and year date of this specification,

5.1.2 Type, style, class, and size machine required (see 4.1),

5.1.3 When a service-supply valve is required (see 7.4),

5.1.4 Electrical power supply characteristics (current, voltage, phase, frequency) (see Section 8),

5.1.5 When a detergent feeder is required (see 7.13),

5.1.6 When a rinse agent feeder is required (see 7.14),

5.1.7 Sanitizing agent, feeder requirements, (see 7.15),

5.1.8 Accessory equipment, spare and maintenance parts required, as suggested by manufacturer,

5.1.9 Treatment and painting if other than specified (see Section 10),

5.1.10 When energy consumption profiles, water consumption profiles, or productivity profiles are desired (see 13.3), and

5.1.11 Manufacturer's certification, when required (see Section 14).

6. Materials and Manufacture

6.1 All materials shall be specified as follows:

6.1.1 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, design, and construction requirements of NSF No. 3 and Criteria C-2, where applicable.

6.1.2 *Corrosion-Resistant Steel*—Corrosion-resistant steel shall conform to the requirements of any 300 series stainless steel specified in Specifications A 167, A 554, and A 582.

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

6.1.4 *Nickel-Copper Alloy*—Nickel-copper alloys shall conform to the requirements of Specification B 127.

6.1.5 *Plastics*—All plastic materials and components used in the dishmachine rinse system shall conform to NSF No. 14.

7. Construction Requirements

7.1 The dishwashing machine shall be complete so that when connected to the specified source of power, water supply, heating means (steam, electric, or gas), drainage, detergent,

sanitizer and rinse agent feeder as applicable, the unit can be used for its intended function.

7.1.1 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.

7.1.2 The machine shall wash dishes by means of a water and detergent solution pumped from a tank, and shall final rinse the dishes with fresh water from an outside source with sanitizer solution. Provisions shall be made to fill the wash tank either directly from the regular hot water supply with a hand valve or solenoid, or both.

7.1.3 The wash and chemical sanitizing rinse cycles shall be automatically controlled.

7.1.4 A light shall be provided to indicate when the machine is in operation.

7.1.5 Machines shall be provided with tracks of corrosion-resistant steel or other corrosion resisting material not less than 0.070 in., (1.8 mm). Dishwashers shall have an inside working height, including the door height, of not less than 16½ in. (419 mm) above the track.

7.2 *Piping, Tubing, Fittings, and Valves (Installation)*—Connections shall be readily accessible to facilitate installation and maintenance. Piping, tubing, and valves shall be located, whenever possible, on the exterior of the machine.

7.3 *Piping and Fittings*—Water, steam piping, and fittings shall be of corrosion-resisting material. Fresh water supply to the tank shall be discharged not lower than 2 in. (50.8 mm) above the maximum flood level rim, or an effective air gap or vacuum breaker shall be installed to prevent backflow. Backflow protection shall be in accordance with ASSE 1004. The drain and other plumbing connections shall be standard pipe or tubing connections. Drainage piping shall be corrosion-resisting material, or suitable heat-resisting plastic material. (Drain shall have only one connection to the waste line.)

7.4 *Valves*—Steam valves shall be corrosion-resisting material designed for steam applications and for a saturated steam working pressure of 50 psi (344.6 kPa). When specified, a separately packed service supply valve shall be provided for closing the supply of water to the dishwasher. The drain valve shall be permanently marked to show "Open" and "Closed" positions and shall be lever-operated or wheel-operated, ruggedly designed for foot or hand operation except when drain valve closure is automatic. Fresh water rinse valves shall be reliable and fully automatic and suitable for 210°F (98.9°C) water. The manually operated valves, when used, shall be identified.

7.5 *Spray Assemblies*—All spray nozzles and spray arm manifolds shall be of corrosion-resisting materials. All spray assemblies shall be removable without the use of tools and shall be easy to clean.

7.6 *Tank*—The tank shall be constructed of not less than 0.055 in., (1.40 mm), thick corrosion-resistant steel, or other corrosion-resisting material.

7.7 *Overflow*—The dishwashers shall have a readily accessible overflow unit in the tank. The overflow unit, or cover, when provided, shall be removable for cleaning.

