



Standard Specification for Washing Machines, Heat Sanitizing, Commercial, Pot, Pan, and Utensil Vertically Oscillating Arm Type¹

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1. Scope

1.1 This specification covers manually fed, motor-driven vertically oscillating arm type, automatically controlled, commercial pot, pan, and utensil washing machines, hereinafter referred to as “the washer.”

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 precautionary statement pertains only to the test methods portion, Section 9 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:²

- A53/A53M Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated, Welded and Seamless
- A167 Specification for Stainless and Heat-Resisting Chromium-Nickel Steel Plate, Sheet, and Strip
- A276 Specification for Stainless Steel Bars and Shapes
- A436 Specification for Austenitic Gray Iron Castings
- A554 Specification for Welded Stainless Steel Mechanical Tubing
- B43 Specification for Seamless Red Brass Pipe, Standard Sizes
- B75 Specification for Seamless Copper Tube
- B127 Specification for Nickel-Copper Alloy (UNS N04400) Plate, Sheet, and Strip

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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.

- D3951 Practice for Commercial Packaging
- F760 Specification for Food Service Equipment Manuals
- F1021 Specification for Feeders, Detergent, Rinse Agent, and Sanitizing Agent for Commercial Dishwashing and Glasswashing Machines

2.2 American National Standards:³

- ANSI S1.4 Specification for Sound Level Meters
- ANSI S1.13 Methods for the Measurement of Sound Pressure Levels

2.3 Federal Regulation:⁴

- OSHA Title 29

2.4 National Electrical Manufacturers Association Standards:⁵

- NEMA ICS Industrial Controls and Systems
- NEMA MG-I Motors and Generators

2.5 National Fire Protection Association Standard:⁶

- NFPA/ANSI 70 National Electrical Code

2.6 NSF International Standards:⁷

- NSF/ANSI 3 Commercial Warewashing Equipment
- NSF/ANSI 5 Commercial Hot Water Generating Equipment
- NSF/ANSI 29 Detergent/Chemical Feeders for Commercial Spray-Type Dishwashing Machines
- NSF Listings—Food Equipment

2.7 Underwriters Laboratories Standard:⁸

- UL 921 Commercial Dishwashers

3. Terminology

3.1 Definitions:

- 3.1.1 *commercial pot, pan and utensil washing machines*—machines that uniformly wash, rinse, and heat sanitize food

³ Available from American National Standards Institute (ANSI), 25 W. 43rd St., 4th Floor, New York, NY 10036.

⁴ Available from U.S. Government Printing Office Superintendent of Documents, 732 N. Capitol St., NW, Mail Stop: SDE, Washington, DC 20401.

⁵ Available from National Electrical Manufacturers Association, 2101 L St. N.W., Washington, DC 20037.

⁶ Available from National Fire Protection Association (NFPA), 1 Batterymarch Park, Quincy, MA 02269-9101.

⁷ Available from NSF International, P.O. Box 130140, 789 N. Dixboro Rd., Ann Arbor, MI 48113-0140.

⁸ Available from Underwriters Laboratories (UL), 333 Pfingsten Rd., Northbrook, IL 60062.

preparation utensils. The machines shall be capable of removing physical soil from properly racked and pre-scraped items, and sanitizing multiple pots, pans, and utensils.

4. Classification

4.1 *General*—The washer shall be of the following types, styles, sizes, and classes as specified.

4.2 *Types*:

4.2.1 Type I—One rack capacity.

4.2.1.1 *Style A*—One door (front-loading).

4.2.1.2 *Style B*—Three doors (pass-through with front inspection door).

4.3 *Tank Heat*:

4.3.1 *Style 1*—Steam heated.

4.3.1.1 *Class A*—Injection.

4.3.1.2 *Class B*—Heat Exchange Coil.

4.3.2 *Style 2*—Electric Heat.

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, number, and date of this standard type, style, and class of machine required.

5.1.2 A pressure reducing valve, if required (see 7.4). Incoming water pressure must be specified when ordering a pressure reduction valve.

5.1.3 A standard 40°F (22°C) temperature rise steam or electric booster is required. If the required temperature rise is more than 40°F (22°C) (see 7.13), it should be specified.

5.1.4 Electrical power supply characteristics (voltage, phase, frequency) (see 7.11.3).

5.1.5 A detergent feeder, if required (see 7.14).

5.1.6 Accessory equipment, spare and maintenance parts required, as specified in order.

5.1.7 Treatment and painting, if other than specified (see 7.17).

5.1.8 When energy consumption profiles, water consumption profiles, or productivity profiles are desired (see 9.3).

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

6. Materials

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 pot, pan, and utensil washing machines shall meet the material, design, and construction requirements of NSF/ANSI 3.

6.1.2 *Corrosion-Resistant Steel*—Corrosion-resistant steel shall conform to the requirements of any 300 series stainless steel specified in 2.1 (see Specification A167).

6.1.3 *Corrosion-Resisting Material*—Corrosion-resisting material is other than corrosion-resistant steel that is equivalent in the pot, pan, and utensil washer application.

6.1.4 *Nickel-Copper Alloy*—Nickel-copper alloys shall conform to the requirements of Specification B127.

7. Design and Construction

7.1 The washer shall be complete so that when connected to the specified source of power, water supply, heating means (steam or electric), drainage, detergent and rinse agent feeder as applicable, the unit can be used for its intended function. Machines shall be rigid and quiet in operation. Parts requiring adjustment or service, or both, shall be readily accessible. The machine shall wash pots, pans, and utensils by means of a water and detergent solution pumped from a tank, and shall final rinse the pots, pans, and utensils with fresh water from an outside source at 20 ± 5 psi (137.8 ± 34.4 kPa) incoming pressure. Provisions shall be made to fill the wash tank either directly from the regular hot water supply with a hand valve or through the booster or solenoids, or both. The wash, dwell, and 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 or other corrosion-resisting material not less than 0.109 in. (2.8 mm). They shall have an inside working height including the door height of not less than 27 in. (686 mm).

7.2 *Piping, Tubing, Fittings, and Valves (Installation)*—Connections shall be readily accessible to facilitate installation and maintenance (see Specifications A53/A53M, B43, B75, and A554).

7.3 *Piping and Fittings*—Water, steam piping, and fittings shall be of corrosion-resisting material, or suitable heat-resisting plastic material.

7.3.1 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 NSF/ANSI 3. The drain and other plumbing connections shall be standard pipe or tubing connections. Drains may be joined into a single trunk line requiring only one connection or arranged to permit individual connections 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). 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. When specified (see 5.1.2), a water pressure reducing valve shall be provided for reducing water pressure to 20 ± 5 psi (137.8 ± 34.4 kPa) (see ANSI SI.4 and ANSI SI.13).

7.5 *Spray Assemblies*—All spray nozzles and spray arm manifolds shall be of corrosion-resisting materials. The main spray arm assembly shall include separate wash and rinse pipes. The assembly shall be directly connected by means of a rod-cam device. The assembly shall oscillate thereby moving the spray arms vertically between racked ware. A secondary spray assembly consisting of water-driven rotary sprays shall be installed under the work rack.