



Designation: **F860 – 07 (Reapproved 2013) F860 – 07 (Reapproved 2018)**^{ε1} An American National Standard

Standard Specification for Hot Water Sanitizing Commercial Dishwashing Machines, Multiple Tank, Rackless Conveyor Type¹

This standard is issued under the fixed designation F860; 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.

This standard has been approved for use by agencies of the U.S. Department of Defense.

ε¹ NOTE—Editorial corrections incorporated throughout in December 2018.

1. Scope

1.1 This specification covers multiple tank, automatic rackless conveyor type, commercial dishwashing machines.

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

1.3 *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

[A29/A29M Specification for General Requirements for Steel Bars, Carbon and Alloy, Hot-Wrought](#)

[A102 Specification for Ferrovandium](#)

[A167 Specification for Stainless and Heat-Resisting Chromium-Nickel Steel Plate, Sheet, and Strip \(Withdrawn 2014\)](#)³

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

[A436 Specification for Austenitic Gray Iron Castings](#)

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

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

[B43 Specification for Seamless Red Brass Pipe, Standard Sizes](#)

[B75 Specification for Seamless Copper Tube \(Metric\) B0075_B0075M](#)

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

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

2.2 *Federal Regulation:*⁴

[OSHA Title 29](#)

2.3 *American National Standards:*⁵

[ANSI S1.4 Specification for Sound Level Meters](#)

[ANSI S1.13 Methods for the Measurement of Sound Pressure Levels](#)

2.4 *National Electrical Manufacturers Association Standards:*⁶

[NEMA ICS Industrial Controls and Systems](#)

[NEMA MG-1 Motor and Generators](#)

2.5 *National Fire Protection Association Standard:*⁷

[NFPA No. 70 National Electrical Code](#)

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 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.

³ The last approved version of this historical standard is referenced on www.astm.org.

⁴ Code of Federal Regulations, Chapter XVII, Part 1910, available from Superintendent of Documents, Government Printing Office, Washington, DC 20402.

⁵ Available from American National Standards Institute, 11 W. 42nd St., 13th Floor, New York, NY 10036.

⁶ Available from National Electrical Manufacturers Assn., 2101 "L" Street, NW, Washington, DC 20037.

⁷ Available from National Fire Protection Assn., Batterymarch Park, Quincy, MA 02269.

2.6 *NSF International Standards, Criteria, and Listings:*⁸

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

[NSF 5 Commercial Hot Water Generating Equipment](#)

[NSF 29 Detergent/Chemical Feeders For Commercial Spray Type Dishwashing Machines](#)

[NSF Food Equipment and Related Products, Components, and Materials](#)

2.7 *Underwriters Laboratories Standard:*⁹

[UL 921 Commercial Electric Dishwashers](#)

[UL 1453 Electric Booster and Commercial Storage Tank Water Heaters](#)

2.8 *American Society of Sanitary Engineering Standards:*¹⁰

[ASSE 1004 Dishwashers Performance Requirements for Commercial Dishwashing Machines](#)

iTeh Standards (<https://standards.iteh.ai>) Document Preview

[ASTM F860-07\(2018\)e1](#)

<https://standards.iteh.ai/catalog/standards/astm/5eacece0-c5c8-43c2-ae42-04fbcdd46ef6/astm-f860-072018e1>

⁸ Available from NSF International, 789 N. Dixboro Rd., Ann Arbor, MI 48105-9723.

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

¹⁰ Available from American Society of Sanitary Engineering, P. O. Box 9712, Bay Village, OH 44140; ASSE International Chapter of IAPMO, LLC, 18927 Hickory Creek Drive, Suite 220, Mokena, IL 60448.

3. Terminology

3.1 Definitions:

3.1.1 *commercial dishwashing machines, n*—machines that uniformly wash, rinse, and hot water–sanitize eating and drinking utensils.

3.1.1.1 Discussion—

The machines shall be capable of removing physical soil from properly pre-scraped items and sanitizing multiple use eating and drinking utensils. These machines shall automatically convey soiled dishes through the treatment stages of the machine, conveying them out at the clean end of the machine. The dishwashing machines shall consist of the following principal parts: legs, wash chamber, rinse chamber, tank, door, spray assemblies, pump motors, controls, piping, valves, conveying mechanism, heating equipment, and accessories.

4. Classification

4.1 *General*—Dishwashing machines shall be of the following types, styles, classes, and groups, as specified.

4.2 Types:

4.2.1 *Type I*—This machine shall be designed and supplied to accept the feeding of soiled tableware from the right side, when facing the front of the machine.

4.2.2 *Type II*—This machine shall be designed and supplied to accept the feeding of soiled tableware from the left side, when facing the front of the machine.

4.3 Styles and Classes:

4.3.1 *Style 1 (Steam Heated)*—Low pressure steam 20 to 35 psi (137.8 to 241.3 kPa) flowing pressure at point of machine connection.

4.3.1.1 Class A—Injectors.

4.3.1.2 Class B—Heat exchange coils.

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* (see Specification F861):

4.4.1 *Group A*—Minimum conveyor width 22.5 in. (571.5 mm) with an operating capacity of 5000 dishes per hour minimum.

4.4.2 *Group B*—Minimum conveyor width 26.5 in. (673.1 mm) with an operating capacity of 8700 dishes per hour minimum.

4.4.3 *Group C*—Minimum conveyor width 31 in. (787 mm) with an operating capacity of 11 800 dishes per hour minimum.

4.5 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.

5. Ordering Information

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

5.1.1 Title, number, and date of this standard,

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

5.1.3 Length of load and unload sections (see 4.4),

5.1.4 Noise level requirements, if other than specified (see 11.2),

5.1.5 When a service-supply valve is required (see 7.5),

5.1.6 When a standard 40°F (22°C) temperature rise steam or electric, or gas booster is required, or stipulate if the required temperature rise is more than 40°F (22°C) (see 7.14),

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

5.1.8 When a detergent feeder is required (see 7.15),

5.1.9 When a rinse agent feeder is required (see 7.16),

5.1.10 Accessory equipment, such as end cowls with vent opening, or spare and maintenance parts required, as suggested by manufacturer,

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

5.1.12 When energy consumption profiles, water consumption profiles, or productivity profiles are desired (see 12.3), and

5.1.13 Manufacturing certification when required (see Section 13).