



Standard Specification for Mixing Machines, Food, Electric¹

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

1. Scope

1.1 This specification covers vertical electric food mixing machines in the size range (as expressed by bowl capacity) from 5 to 140 qt. These machines shall be adaptable for mixing, whipping, and beating food products. This specification does not include special purpose machines that are intended solely for mixing dough.

1.2 This specification also covers optional construction features and attachments that enhance the mixing, beating, or whipping capabilities of the machine. This specification does not cover ancillary equipment that can be driven by the attachment hub.

1.3 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.

1.4 The following precautionary caveat 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, health, and environmental practices and determine the applicability of regulatory limitations prior to use.*

1.5 *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

[D3951 Practice for Commercial Packaging](#)

¹ This specification is under the jurisdiction of ASTM Committee F26 on Food Service Equipment and is the direct responsibility of Subcommittee F26.04 on Mechanical Preparation 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.

[F760 Specification for Food Service Equipment Manuals](#)
[F1166 Practice for Human Engineering Design for Marine Systems, Equipment, and Facilities](#)

2.2 NSF/ANSI Standards:³

[NSF/ANSI No. 2 Food Equipment](#)

[NSF/ANSI No. 8 Commercial Powered Food Preparation Equipment](#)

2.3 Underwriters Laboratories Standards:⁴

[ANSI/UL 763 Motor-Operated Commercial Food Preparing Machines](#)

[ANSI/UL 969 Marking and Labeling Systems](#)

2.4 ANSI Standards:⁵

[ANSI Z1.4 Sampling Procedures and Tables for Inspection by Attributes](#)

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

2.5 Military Standards:⁶

[MIL-STD-1399/300 Interface Standard for Shipboard Systems, Section 300A, Electric Power, Alternating Current](#)

[MIL-STD-167/1 Mechanical Vibration of Shipboard Equipment \(Type I—Environmental and Type II—Internally Excited\)](#)

[MIL-STD-461 Requirements for the Control of Electromagnetic Interference Characteristics of Subsystems and Equipment](#)

3. Terminology

3.1 Definitions of Terms Specific to This Standard:

3.1.1 *agitators, n*—these devices attach to the vertical shaft that protrudes downward from the mixer and converts the planetary rotation into the desired action on the foodstuffs within the bowl.

³ Available from NSF International, P.O. Box 130140, 789 N. Dixboro Rd., Ann Arbor, MI 48113-0140, <http://www.nsf.org>.

⁴ Available from comm2000, 1414 Brook Dr., Downers Grove, IL 60515.

⁵ Available from American National Standards Institute (ANSI), 25 W. 43rd St., 4th Floor, New York, NY 10036, <http://www.ansi.org>.

⁶ Available from Standardization Documents Order Desk, DODSSP, Bldg. 4, Section D, 700 Robbins Ave., Philadelphia, PA 19111-5098, <http://www.dodssp.daps.mil>.

3.1.2 *attachment hub, n*—the device that locks ancillary devices, such as a vegetable slicer or a chopping end, into an industry standard #12 tapered hub (#10 tapered hub for Size 5 machines) and provides a rotating square drive. This is mounted above the bowl on the front of the mixer.

3.1.3 *bowl guard, n*—the barrier, assembled over the bowl area, intended to reduce the user’s access to the hazards that exist in the bowl during machine operation.

4. Classification

4.1 Food mixers covered in this specification are the following types:

4.1.1 *Type I*, bench-mounted mixer:

Size	Bowl Capacity, qt, min/max	Agitator r/min		Motor Horsepower Rating, min
		Lowest Speed, less than	Highest Speed, greater than	
5	5/7	150	500	1/6
12	12/15	120	300	1/3
20	20/25	120	300	1/2

4.1.2 *Type II*, floor-mounted mixer:

Size	Bowl Capacity, qt, min/max	Agitator r/min		Motor Horsepower Rating, min
		Lowest Speed, less than	Highest Speed, greater than	
20	20/25	120	300	1/2
30	30/36	100	300	3/4
40	40/45	100	300	1 1/4
60	60/70	80	280	1 1/2
80	80/90	80	280	3
140	140/160	55	260	5

4.1.3 *Classes:*

4.1.3.1 *Class 1*—Painted finish.

4.1.3.2 *Class 2*—Nonpainted finish. All nonwearing surfaces to be either polished aluminum, plated carbon steel, or stainless steel.

5. Ordering Information

5.1 Purchasers should select the mixer and any preferred options and include the following information in the purchasing document:

5.1.1 Title, number, and date of this specification,

5.1.2 Type, size, and class of mixer required (see 4.1),

5.1.3 Electrical power supply characteristics; voltage, phase, frequency (see 6.5 and 6.7),

5.1.4 Bowls, agitators, accessory equipment, options, mixer guard, spare parts, and maintenance parts required,

5.1.5 Labeling requirements (if different than Section 13),

5.1.6 Quantity of mixers to be furnished, and

5.1.7 Any special requirements or deviations from this specification.

5.1.8 When Federal/Military procurement is required, review and implement the applicable supplementary requirements (see S1 through S9).

5.1.9 When specified, the purchaser shall be furnished certification that samples representing each lot have been either tested or inspected as directed in this specification and the requirements have been met. When specified, a copy of the test results shall be furnished.

6. Physical Requirements

6.1 *Design and Manufacture*—The mixer shall meet the then current applicable requirements of NSF/ANSI No. 8 and ANSI/UL 763. Accessories, such as agitators, bowl trucks, bowls, tables, extensions, adapters, splash covers, and storage stands shall meet the applicable requirements of NSF/ANSI No. 2 or NSF/ANSI No. 8 at the time of purchase. Optional accessories, component parts, assemblies, and spare parts shall be identical to the extent necessary to insure interchangeability between mixers.

6.1.1 *Compliance with NSF/ANSI No. 8*—Acceptable evidence of the mixer meeting the requirements of NSF/ANSI No. 8 shall be the NSF listing mark on the finished product and listing in the manufacturer’s product listings on the NSF website, nsf.org, or a certified test report from a recognized independent testing laboratory acceptable to the user, or a certificate issued by NSF under its special one time contract evaluation/certification service.

6.1.2 *Compliance with ANSI/UL 763*—Acceptable evidence of meeting the requirements of ANSI/UL 763 shall be a UL Listing mark on the mixer, or a certified test report from a recognized independent testing laboratory acceptable to the user.

6.2 *Drive Mechanism*—The mixer shall be driven by an electric motor, through a reduction system, to the planetary/beater shaft system. The entire drive system shall be enclosed within the mixer itself. All constituent active parts within the drive system shall be replaceable. All mixers shall be equipped with an internal clutch, shock absorber, or belt drive to minimize the shock of starting or shifting gears of the mixer. Size 60 and larger gear drive speed selection mixers shall either be equipped with a shift interlock switch that will automatically disconnect power to the main drive motor if the operator attempts to shift speeds without first shutting off the motor or be designed to permit speed changes during operation.

6.3 *Speed Selector*—A speed selector shall be provided to change agitator speed. Either continuously variable or discrete speed selection is acceptable. A means to provide the user with reference marks for speed repeatability is required. In no case shall less than three distinct speeds be available on gear box equipped mixers or three distinct markings be available on continuously variable transmissions.

6.4 *Beater Shaft*—The beater shaft shall be vertically mounted and shall be held securely in place. Agitators shall fit securely and shall be capable of being removed or replaced without tools. The beater shaft shall be connected to planetary gearing to provide two separate rotating motions of the agitator simultaneously.

6.5 *Motor(s)*—Minimum horsepower rating for the main drive motor of the mixer shall meet the requirements of 4.1.1 or 4.1.2, as appropriate. If an auxiliary motor is used to perform another function (such as, bowl lifts), it shall be internally interconnected within the mixer to provide a single electrical point connection. Size 5 through 30 mixers shall be available for operation on a 120/60/1 line. Size 60 and larger mixers shall be available for operation on a 208/60/3 line. Other voltage availabilities are at the discretion of the manufacturer. Mixers