

00-D-582D
February 1, 1978
SUPERSEDING
00-D-582C
July 7, 1970

FEDERAL SPECIFICATION

DOUGHNUT MACHINES, CUTTING AND FRYING

This specification was approved by the Commissioner, Federal Supply Service, General Services Administration, for the use of all Federal agencies.

1. SCOPE AND CLASSIFICATION

1.1. This specification covers electric and gas heated, automatic cutting and frying doughnut machines.

1.2 Classification.

1.2.1 Types and sizes. Doughnut machines covered by this specification shall be of the following types and sizes, as specified (see 6.2):

Type I - Electrically heated.

Size:

- 40 - Capacity per hour, 35 dozen doughnuts.
- 100 - Capacity per hour, 94 dozen doughnuts.
- 200 - Capacity per hour, 188 dozen doughnuts.
- 400 - Capacity per hour, 400 dozen doughnuts.

Type II - Gas heated.

Size:

- 100 - Capacity per hour, 100 dozen doughnuts.
- 200 - Capacity per hour, 200 dozen doughnuts.

2. APPLICABLE DOCUMENTS

2.1 The following documents, of the issue in effect on date of invitation for bids or request for proposal, form a part of this specification to the extent specified herein.

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Federal Specification:

CC-N-1807 - Motors, Alternating Current, Fractional and
Integral Horse Power (500 HP and Smaller)

Federal Standard:

FED-STD-123 - Marking for Shipment (Civil Agencies).

(Activities outside the Federal Government may obtain copies of Federal Specifications, Standards, and Handbooks as outlined under General Information in the Index of Federal Specifications and Standards and at the prices indicated in the Index. The Index, which includes cumulative monthly supplements as issued, is for sale on a subscription basis by the Superintendent of Documents, U.S. Government Printing Office, Washington, DC 20402.

(Single copies of this specification and other Federal specifications required by activities outside the Federal Government for bidding purposes are available without charge from Business Service Centers at the General Services Administration Regional Offices in Boston, New York, Washington, DC, Philadelphia, Atlanta, Chicago, Kansas City, MO, Fort Worth, Houston, Denver, San Francisco, Los Angeles, and Seattle, WA.

(Federal Government activities may obtain copies of Federal Specifications, Standards, and Handbooks and the index of Federal Specifications and Standards from established distribution points in their agencies.)

Military Specification:

MIL-B-2316 - Bakery, Equipment, Including Units, Assemblies, Repair
Parts, and Tools, Preparation for Delivery of

Military Standards:

MIL-STD-105 - Sampling Procedures and Tables for Inspection by
Attributes
MIL-STD-129 - Marking for Shipment and Storage
MIL-STD-461 - Electromagnetic Interference Characteristics,
requirements for Equipment
MIL-STD-462 - Electromagnetic Interference Characteristics
Measurement of

(Copies of Military Specifications and Standards required by suppliers in connection with specific procurement functions should be obtained from the procuring activity or as directed by the contracting officer.)

2.2 Other publications. The following documents form a part of this specification to the extent specified herein. Unless a specific issue is identified, the issue in effect on date of invitation for bids or request for proposal shall apply.

Baking Industry Sanitation Standard Committee (BISSC) Standard

No. 16 - Doughnut Equipment

(Application for copies should be addressed to the Baking Industry Sanitation Standard Committee, 511 Fifth Avenue, New York, NY 10017.)

National Sanitation Foundation (NSF) Standard

No. 4 - Commercial Cooking and Warming Equipment

Listing of Food Service Equipment

(Application for copies should be addressed to the National Sanitation Foundation, NSF Building, Ann Arbor, MI 48105.)

Underwriters Laboratories Inc. (UL) Standard

UL 197 - Commercial Electric Cooking Appliance
Electric Appliance and Utilization
Equipment List

UL 197 51 - Commercial Electric Cooking Appliance for
Use Under USCG, Electrical Engineering
Regulations Subchapter J (46 CFR, Parts 110-113)

(Application for copies should be addressed to the Underwriters Laboratories Inc., 207 East Ohio Street, Chicago, IL 60611; 333 Pfingsten Road, Northbrook, IL 60062, 1285 Walt Whitman Road, Melville, Long Island, NY 11746; 1655 Scott Blvd., Santa Clara, CA 95050; or 2602 Tampa East Blvd., Tampa, FL 33619.)

American National Standards Institute (ANSI) Standard

- Z 21.18 - Gas Appliance Pressure Regulators
- Z 21.27 - Hotel and Restaurant, Gas Deep Fat Fryers
- Z 21.41 - Quick-Disconnect Devices for Use with Gas Fuel
- Z 21.45 - Flexible Connectors of Other Than All-Metal
Construction for Gas Appliance.

(Application for copies should be addressed to the American National Standards Institute, 1430 Broadway, New York, NY 10018 or the American Gas Association, 8501 East Pleasant Valley Road, Cleveland, OH 44131.)

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American Gas Association (A.G.A.), Inc.

Directory of Certified Appliances and Accessories

(Application for copies should be addressed to the American Gas Association, 8501 East Pleasant Valley Road, Cleveland, OH 44131.)

American Society for Testing and Materials (ASTM)

- A 167 - Stainless and Heat-Resisting Chromium-Nickel Steel Plate, Sheet and Strip
- A 176 - Stainless and Heat-Resisting Chromium Steel Plate, Sheet and Strip
- B 344 - Drawn or Rolled Nickel-Chromium and Nickel-Chromium-Iron Alloys for Electrical Heating Elements

(Application for copies should be addressed to the American Society for Testing and Materials, 1916 Race Street, Philadelphia, PA 19103.)

(Technical society and technical association specifications and standards are generally available for reference from libraries. They are also distributed among technical groups and using Federal agencies.)

3. REQUIREMENTS

3.1 Standard product. The doughnut machines shall, as a minimum, be in accordance with the requirements of this specification and shall be the manufacturer's standard commercial product with any added features needed to comply with the requirements of this specification. Modifications to add features shall not incorporate different parts unless such parts are used on other current commercial models. Standard or modified commercial products furnished in accordance with this specification shall be identifiable by all regular manufacturers or commercial service organizations servicing the brand involved. Service organizations shall be capable of providing complete parts and repair services on models furnished to the Government consistent with their normal commercial practices.

3.2 Codes and standards. The doughnut machines shall comply with the applicable requirements of NSF Standard No. 4 or BISSC Standard No. 16, UL 197 and UL 197 S1 for shipboard installation, and ANSI Z 21.27, when applicable.

3.2.1 Compliance. Prior to approval of the first shipment, the supplier shall submit satisfactory evidence to the contracting officer or his authorized representative that the doughnut machines he proposes to furnish under this specification meet the applicable requirements of NSF or BISSC, UL and ANSI, as applicable.

3.2.1.1 NSF. Acceptable evidence of meeting the requirements of NSF shall be:

(1) A listing in the current edition of the NSF "Listing of Food Service Equipment" and display of the NSF seal on the finished doughnut machine, or

(2) A certification for the doughnut machine issued by NSF under their one-time contract evaluation/certification service shall be submitted, or

(3) A certified test report from a recognized independent testing laboratory acceptable to the medical authority functioning in an advisory capacity to the preparing agency of the specification, indicating that the doughnut machine has been tested and conforms to NSF Standard No. 4.

3.2.1.2 BISSC. Acceptable evidence of meeting the requirements of BISSC Standard No. 16 shall be a photostatic copy of the current BISSC certificate of authorization that the model doughnut machine he proposes to furnish under this specification conforms to the applicable requirements of BISSC Standard No. 16.

3.2.1.3 UL. Acceptable evidence of meeting the requirements of UL 197 for the type I doughnut machines shall be the UL label, UL listing mark, or a certified test report from a recognized independent testing laboratory acceptable to the Government, indicating compliance with the applicable requirements of UL 197, and UL 197 S1 for shipboard installation, when applicable.

3.2.1.4 ANSI. Acceptable evidence of meeting the applicable requirements of ANSI Z 21.27 for the type II doughnut machines shall be reproduced copy of the American Gas Association (A.G.A.) Appliance Certificate, a listing in the latest A.G.A. "Directory of Certified Appliances and Accessories, or a certified test report from a recognized independent testing laboratory, acceptable to the Government, indicating compliance with ANSI Standard No. Z21.27.

3.3 Materials and components. Materials and components shall be as specified herein. Materials not definitely specified shall be of the quality normally used by the manufacturer in his standard commercial doughnut machines provided the complete item complies with all provisions of this specification.

3.3.1 Stainless steel. Stainless steel shall conform to type 302 or 304 of ASTM A 167.

3.3.2 Insulation. Insulation material shall have a K factor not greater than 0.57 British thermal units (B.t.u.) per hour per square foot per degree Fahrenheit (deg. F) per inch of thickness (3.2 W/m^2 [MULTIPLIED BY] K) at 90 deg. F (32.2 deg. C) when packed to the density normally used in the doughnut machines.

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3.4 Design and construction. The doughnut machine shall be designed to automatically cut and fry doughnuts. The doughnut machine shall consist essentially of a dough hopper, dough feeding and cutting device, frying fat kettle with doughnut conveyor and turner, and a means for ejecting fried doughnuts. There shall be a bowl rest on top of the dough hopper for the size 200 and 400 machines. The heating zone of the machines shall be enclosed in a case, or at the option of the manufacturer the entire machine, except for the top of the frying fat kettle shall be enclosed. There shall be a means to control the size and weight of the doughnuts with a minimum range of adjustment of from 12 ounces (.34 kg) of dough weight per dozen doughnuts to 18 ounces (.51 kg) of dough weight per dozen doughnuts. When tested as specified in 4.4.2 the weight of any doughnut shall not vary by more than 10 percent from the average weight of the doughnuts produced. There shall be means to adjust the speed of the conveyor to provide a frying time with a minimum range of 1 to 2 minutes when tested as specified in 4.4.2.

3.4.1 Capacities. The hopper capacities and the cutting and frying capacities shall be as specified in table I when tested as specified in 4.4.2.

TABLE I. Capacities

Type and size machine	Minimum hopper capacity (pounds (kg) of dry doughnut mix)	Minimum cutting and (dozen doughnuts per hour)
Type I - Size		
40	10 (4.53)	35
100	25 (11.34)	94
200	35 (15.88)	188
400	75 (34.02)	400
Type II - Size		
100	25 (11.34)	100
200	35 (15.88)	200

3.4.2 Cases. The cases shall enclose the drive mechanism and the heating zones and shall have openings with covers to allow access to all interior moving mechanism. The cases and other exterior parts shall be fabricated of the stainless steel specified in 3.3.1. Thickness of the case materials shall be not less than 0.0375 inch (.95 mm).

3.4.3 Leveling devices. There shall be a leveling device attached to the bottom of the frames for leveling the machines.

3.4.4 Electrical. Electric motors shall be continuous duty, induction type, or shaded pole type Without commutation devices having not more than one starting contact conforming to CC-M-1807. The motors shall be of the horsepower necessary to meet the performance requirements specified herein. The machines shall be completely wired and shall have an on-off switch or switches and protective overload manual reset devices and a conveyor speed control accessible to the machine operator. At the option of the manufacturer the type I, size 40 machine may have replaceable fuses. The on-off switch or switches, protective overload device or fuses and the conveyor spread control shall be designed on the machine, or at the option of the manufacturer may be mounted on a remote panel located at the operator's normal operating position. Unless otherwise specified (see 6.2), electrical equipment shall be designed for operation on nominal 208-volt, 60-hertz, three-phase power source. For Naval shipboard installation, unless otherwise specified (see 6.2), electric equipment shall be designed for operation on nominal 440-volt, 60-hertz, three-phase power source.

3.4.4.1 Electromagnetic compatibility. When specified (see 6.2), the doughnut machines shall be designed and equipped for electromagnetic compatibility in accordance with class 113 of MIL-STD-461.

3.4.5 Frying kettles. The frying kettle shall be constructed of materials specified in 3.3.1. The kettle, except for the type I, size 40 doughnut machine, shall have drains of the siphon or hand-valve type and shall have means for automatically maintaining the frying fat level in the frying kettle by adding new fat from a melted fat reservoir. Frying fat kettles may be insulated or non-insulated in accordance with the manufacturers' standard practice. Insulation material, when used, shall conform to 3.3.2.

3.4.6 Thermostat. Each doughnut machine shall have an adjustable thermostat mounted so as to be accessible to the machine operator when standing at the feed position. The thermostat shall be marked in not more than 50 deg. F (10 deg. C) increments and shall have a range of from 200 deg. F (93.3 deg. C) to 400 deg. F (204.4 deg. C) and shall limit the maximum frying fat temperature to 425 deg. F (218.3 deg. C). When tested as specified in 4.4.2, the thermostat shall maintain a frying fat temperature of 375 deg. F (190.5 deg. C) + 15 deg. F (+/- 8.5 deg. C).

3.4.6.1 Overtemperature thermostat, type I, electric. The type I doughnut machine shall be provided with a second or overtemperature thermostat. The first thermostat shall be as specified in 3.4.6. The second or overtemperature thermostat shall be nonadjustable type. The overtemperature circuit shall be manual reset type installed in the temperature control system to shut off the entire electrical system when the fat reaches a temperature not exceeding 430 deg. F (221 deg. C) and shall be tested in accordance with 4.4.3. In lieu thereof, a fusible thermostatic cutoff is acceptable where temperature controls are electric.

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All heating circuit control devices shall be enclosed within the body of the devices or in a separate enclosure forming part of the body of the device. When specified (see 6.2), for Naval shipboard installation, in addition to the adjustable operating thermostat, the doughnut machine shall be equipped with an upper temperature limit thermostat to serve as a temperature limit switch. The upper temperature limit thermostat shall not interfere with the normal cycling of the doughnut machine under control of the operating thermostat, but shall operate in the event of above normal fat temperature, closing when the fat reaches a temperature not exceeding 430 deg. F (221 deg. C). This upper temperature limit thermostat shall be nonadjustable with normally open contacts and shall be of the "negative bias" type, so constructed that, in the event of hydraulic failure of the thermostat, the contacts will close and activate the shunt trip coil of an external disconnect circuit breaker. The contacts of the upper temperature limit thermostat shall be connected to a separate terminal block within the fryer housing. (This secondary safety thermostat is intended for connection to the 120 volt shunt trip coil of an external disconnect circuit breaker, when doughnut machine is installed).

3.4.6.1.1 Primary thermostat shunt by-pass assembly. The doughnut machine shall be provided with a primary thermostat shunt by-pass assembly. The shunt by-pass assembly shall consist of a normally open, momentary contact, oil tight, push button type switch with a flush head, signal light and wiring. Whenever the shunt by-pass switch is depressed the primary thermostat shunt by-pass circuit shall be energized and the signal light shall glow and deenergize whenever the shunt by-pass switch is released or the overtemperature thermostat is operated when tested as specified in 4.4.3.

3.4.6.2 Overtemperature thermostat type II, gas. The type II doughnut machine shall be provided with a second thermostat or fusible thermostatic cut-out on the machine and when tested as specified in 4.4.4 shall prevent the frying fat temperature from rising above 460 deg. F (237.7 deg. C). Sensing and capillary tubing shall not contain any toxic material.

3.4.7 Thermometer. Each doughnut machine, except for the type I, size 40 shall be provided with a thermometer.

3.5 Types.

3.5.1 Type I. The frying fat in the type I doughnut machines shall be heated with electric heating elements. The fat heating elements shall have a total minimum power capacity of 4,200, 8,800, 20,000 and 33,000 watts for the size 40, 100, 200 and 400 machines, respectively, when tested as specified in 4.4.2. There shall be a light to indicate when the heating elements are in operation.

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The element shall be of the enclosed conduction type with resistance wire conforming to nominal composition of 80 percent nickel and 20 percent chromium or 60 percent nickel, 16 percent chromium and remainder iron of ASTM B 344, embedded in refractory material and enclosed in a tubular metal sheath of corrosion-resistant metal. The terminals shall be insulated and shall be accessible for connection. The element shall be removable for cleaning purposes on the type I, size 40 machine.

3.5.2 Type II. The type II doughnut machine shall be equipped to operate on natural gas. Main burners shall be provided with fixed orifices with orifice hoods or spuds that can be interchanged. The orifice hoods or spuds shall be unpainted brass. Gas filters shall be provided for all pilots. An automatic pilot including a 100 percent shut-off shall be provided on each unit.

3.5.2.1 Accessories. A pressure regulator for natural gas conforming to Z 21.18 shall be furnished with each unit. The unit shall be furnished with a connector conforming to Z 21.45 and a quick disconnect conforming to Z 21.41. The connector length shall be 60 inches (1524 mm).

3.5.2.2 Automatic ignition. All burners shall be equipped with means for automatic ignition of gas. An automatic pilot device, complete shut-off type, shall be supplied on each doughnut machine.

3.6 Repair and maintenance. There shall be provisions for adjustment, service, and replacement of electrical components, valves, and controls without disturbing or disassembling any major component on the machine. In addition, there shall be access to inspect, service, or adjust any component or equipment required for proper operation of the doughnut machine.

3.7 Operation. When tested as specified in 4.4.1 moving components shall operate properly and shall not bind; adjustable components shall be adjustable over the entire range without binding; starting and stopping devices shall operate properly.

3.8 Lubrication. There shall be a means for lubricating bearings and all points requiring lubrication. Lubrication points shall be accessible and located to prevent lubricant from coming in contact with the dough or frying fat grease. The doughnut machine shall be lubricated at time of delivery.

3.9 Finish. The doughnut machine shall be finished in accordance with the manufacturer's standard practice.

3.10 Marking. Identification and operation instructions shall be permanently and legibly marked directly on the item or on an aluminum, brass or stainless steel plate firmly affixed to the item. Marking shall be stamped, embossed, engraved or photosensitive. The plate thickness shall be not less than 0.012 inch (0.30 mm).

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3.10.1 Identification. Each doughnut machine identification plate shall include the information required by UL 197.

3.10.2 Instruction plate. Each doughnut machine shall be equipped with a users instruction plate permanently fastened to the machine. Instructions shall cover any special procedures to be followed in operating and servicing the machine. There shall be a lubrication chart on all machines except the type I, size 40, indicating points of lubrication, type of lubricant to be used, and time interval.

3.11 Contract data requirements. Contract data requirements shall be as specified (see 6.2).

3.12 Workmanship. The doughnut machines shall be complete and clean and free of scratches, dents, breaks, sharp edges and corners, deformities, burrs, and slivers. All pipe and fitting connections shall be dry tight and shall be free of stripped or crossed threads.

3.12.1 Rivets. Rivets, when used, shall be tight and rivet heads and peened ends shall be round and in full contact with the surfaces of the joined metal. There shall be no empty rivet holes.

3.12.2 Welding and brazing. Welding and brazing shall be complete, continuous, smooth, uniform, sound, and free of burn holes, cracks, fractures, undercutting, excessive metal buildup, and splatter. All scale and flux shall be removed.

3.12.3 Castings. Castings shall be sound and free of blowholes, shrinkage, porosity warping or other defects that render the casting unsound.

3.12.4 Threaded fasteners. All threaded fasteners shall be drawn tight and shall be free of crossed or stripped threads. All nuts and bolts shall have lockwashers.

3.12.5 Soldering. Soldering shall be complete and adherent. All excess solder and all flux shall be removed.

3.12.6 Electric wiring. Electric wiring shall be free of loose connections or terminals and free of cuts and abrasions. There shall be adequate slack between connections and terminals.

4. QUALITY ASSURANCE PROVISIONS

4.1 Responsibility for inspection. Unless otherwise specified in the contract, the supplier is responsible for the performance of all inspection requirements as specified herein. Except as otherwise specified in the contract, the supplier

may use his own or any other facilities suitable for the performance of the inspection requirements specified herein, unless disapproved by the Government. The Government reserves the right to perform any of the inspections set forth in the specification where such inspections are deemed necessary to assure supplies and services conform to prescribed requirements.

4.2 Quality conformance inspection. Except as otherwise specified herein, sampling for inspection shall be performed in accordance with MIL-STD-105.

4.2.1 Component and material inspection. In accordance with 4.1, components and materials shall be inspected in accordance with all the requirements of referenced specifications, drawings, and standards unless otherwise excluded, amended, modified, or qualified in this specification or applicable purchase document.

4.2.2 End item inspection. The inspection lot shall consist of all doughnut machines of one type and size offered for inspection at one time. The sample unit shall be one completely assembled doughnut machine.

4.2.2.1 Visual examination. Examination of the doughnut machines shall be made for defects in table II. The inspection level shall be level II with an acceptable quality level (AQL) of 2.5, expressed in terms of defects per hundred units.

TABLE II. Classification of defects

Examine	Defect
Standard product	Item not in accordance with manufacturer's standard product except for changes necessary to comply with specification requirements
Finish	Not manufacturer's standard finish Painted in product zone
Construction and workmanship (applicable to all components and assemblies)	Exposed sharp edge or corner Not enclosed in a case except for top frying fat kettle
Case	Does not enclose drive mechanism Accesses not covered No provisions for adjustment and replacement of components

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TABLE II. Classification of defects (cont'd)

Examine	Defect
Leveling devices	No leveling devices attached to the bottom of frame
Thermostat	Missing Not adjustable from 200 deg. F (93.3 deg. C) to 400 deg. F (204.4 deg. C) Marked in increments of more than 50 deg. F (10 deg. C)
Controls	On-off switch, protective overload device and motor speed controls not located accessible to operator
Frying fat kettle	No drain of the siphon or hand valve on the frying fat kettle (except type I, size 40)
Thermometer	Missing (except for type I, size 40)
Type I	No light to indicate heating elements are in operation Heating element terminals not insulated nor accessible for connection
Type II	Two orifice hoods not provided nor color coded as required Means not provided to observe burners
Welding and brazing	Missing or incomplete; unsound Burn holes, cracks, fractures, undercut, excessive metal buildup, splatter, scale or flux not removed
Soldering	Incomplete Flux and residue not removed
Threads	Missing, broken, stripped, or fractured
Threaded fasteners	Broken, or missing Loose, lockwashers missing on nuts and bolts
Rivets	Not concentric with the hole and not in contact with the surface of the metal; empty rivet holes

TABLE II. Classification of defects (cont'd)

Examine	Defect
Wiring	Loose connection or terminal Cuts, abrasion, or not adequate slack between connections
Lubrication	Lubrication means not provided for bearings and other points requiring lubrication Points not accessible Points not located to prevent grease from coming in contact with the dough or frying fat Lubrication instruction missing (except for type I, size 40)
Identification marking	Missing, incomplete, or illegible
Instructions	Missing, incomplete, or illegible

4.2.2.2 Dimensional examination. The doughnut machine shall be examined for compliance with dimensions specified, any dimension not within the specification tolerance shall be a defect. The inspection level shall be S-2 with an AQL of 4.0 defects, expressed in terms of defects per hundred units.

4.2.2.3 End item testing. Each doughnut machine shall be tested as specified in 4.4.1. Failure to pass the test shall be cause for rejection of the item. One doughnut machine of the lot shall be tested as specified in 4.4.2 and when applicable in accordance with 4.4.3, 4.4.4 and 4.4.5. Failure to pass any test shall be cause for rejection of the lot.

4.2.3 Examination of preparation for delivery. Examination shall be made for preservation, packaging, packing and marking in accordance with MIL-B-2316.

4.3 Certificate examination. Certificates of compliance, certified test reports, approval labels or listing marks for codes and standards, as applicable, that are submitted as proof of compliance with the specification requirements shall be examined and validated.

4.4 Test methods.

4.4.1 Operational. Connect the doughnut machine to electrical power. Operate the machine for a minimum of 30 minutes, without dough or frying fat. Do not energize the heating elements while operating, stop and start the machine at

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least five times. While operating, observe bearings for overheating, starting and stopping device for proper operation, and moving components for binding or improper operation. Also, move adjustable components over the range of adjustment, and observe for binding and improper operation to determine compliance with the requirements specified in 3.7. Any nonconformance shall constitute failure of this test.

4.2 Functional. Fill the frying fat kettle with fat, and connect the machine to electrical power or gas, as applicable. Set the controls to produce doughnuts of 18 ounces (0.51 kg) per dozen weight and the thermostat at 375 deg. F (190 deg. C). Allow the fat to melt and reach frying temperature. Reconstitute dry doughnut mix of the weight specified in table I, by adding liquids in accordance with the doughnut mix manufacturers instructions. Place the wet doughnut mix in the hopper to determine compliance with the hopper capacity specified in table I. Set the machine for a 90 second frying time and start producing doughnuts. Count the number of doughnuts produced to determine compliance with the cutting and frying capacities specified in 3.4.1 and table I. Determine the average weight of the doughnut produced, and weigh one doughnut from each dozen produced to determine compliance with 3.4. While frying, determine the fat temperature in each square foot of open frying fat kettle area to determine compliance with 3.4.6. For type I machine, determine the electrical input to determine compliance with 3.5.1. During the test, observe the fat level to determine compliance with the requirements specified in 3.4.5 for the fat level being automatically maintained from a fat reservoir. Repeat the above test, with the controls set to produce doughnuts of 12 ounces (0.34 kg) per dozen weight, for 10 minutes, and determine the average weight of the doughnuts produced; weigh one doughnut from each dozen produced to determine compliance with 3.4. Then operate the speed of the conveyor over a 1 to 2 minute frying time range to determine compliance with the requirements specified in 3.4. Any nonconformance shall constitute failure of this test.

4.4.3 Overtemperature thermostat test, type I. The type I doughnut machine overtemperature thermostatic test shall be performed after completion of the tests specified in 4.4.2. The first thermostat shall be rendered inoperative from the automatic control circuit by depressing the primary thermostat shunt by-pass switch. With the shunt by-pass switch depressed the temperature of the hydrogenated vegetable oil shall be increased until the overtemperature thermostat specified in 3.4.6.1 opens the heating element circuit and the primary thermostat shunt by-pass signal light goes out. The temperature of the oil shall be measured at the center of the well one inch (25 mm) below the surface at 30-second intervals until the temperature stabilizes. The temperature reading of the oil obtained during the observation period shall not exceed the temperature requirement of 3.4.6.1. This test shall be repeated three times for compliance with the by-pass requirements of 3.4.6.1.1. Any noncompliance with the requirements specified shall constitute failure of this test.

4.4.4 Overtemperature thermostat test type II. The type II doughnut machine frying fat thermostat shall be by-passed and the frying fat allowed to continue heating until either the second control actuates and stops the heating process or until the frying fat temperature exceeds 460 deg. F (238 deg. C). Failure of the second control to prevent the frying fat temperature from exceeding 460 deg. F (233 deg. C) shall constitute failure of this test.

4.4.5 Electromagnetic compatibility test. When electromagnetic compatibility is required, the representative sample shall be tested by the supplier in accordance with the test method CE03, and RE02 of MIL-STD-462. The Government reserves the right to witness tests performed by the supplier or his private testing organization. The supplier shall furnish to the contracting officer written certification that the Interference Control Plan, the EMI/EMC Test Plan, the Electromagnetic Compatibility Test Report and requirements meet MIL-STD-461.

5. PREPARATION FOR DELIVERY

5.1 Preservation, packaging, and packing. Preservation, packaging, and packing for level A, B, or C, shall be in accordance with MIL-B-2316 (see 6.2).

5.2 Marking. Marking shall be in accordance with 5.2.1 or 5.2.2 as specified (see 6.2).

5.2.1 Civil agencies. In addition to any special marking required by the contract, interior packages and shipping containers shall be marked in accordance with FED-STD-123.

5.2.2 Military activities. In addition to any special marking required by the contract, interior packages and shipping containers shall be marked in accordance with MIL-STD-129.

6. NOTES

6.1 Intended use. The doughnut machines covered by this specification are intended for use in automatically producing fried doughnuts on a mass production basis.

6.2 Ordering data. Purchasers should select the preferred options permitted herein and include the following information in procurement documents:

- (a) Title, number, and date of this specification.
- (b) Type and size doughnut machine required (see 1.2.1).
- (c) When electrical characteristics are other than specified (see 3.4.4).
- (d) When electrical characteristics for Naval shipboard installation is other than specified (see 3.4.4).

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- (e) When electromagnetic compatibility is required (see 3.4.4.1).
- (f) When an overtemperature thermostat is required for Naval shipboard installation (see 3.4.6.1).
- (g) Data required (see 3.11 and 6.2.1).
- (h) Selection of applicable levels of preservation, packaging, packing, and marking (see 5.1 and 5.2).

6.2.1 Contract data requirements. Any data items to be delivered under any contract for items covered by this specification should be specifically called for in the contract in accordance with the applicable regulations of the procuring activity.

Custodians:

Army - GL
Navy - SA

Preparing activity:

Army - GL

Civil Agency Coordinating Activities:

Review activities:

Army - MD
Navy - MC

GSA-FSS

Project No. 7320-0649

User activities:

Army - CE
Navy - CG

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Orders for this publication are to be placed with General Services Administration, acting as an agent for the Superintendent of Documents. See section 2 of this specification to obtain extra copies and other documents referenced herein. Price 90 cents each.

VALIDATION

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NOTICE 1
October 23, 1987

FEDERAL SPECIFICATION

DOUGHNUT MACHINES, CUTTING AND FRYING

Federal Specification 00-D-582D dated February 1, 1978 has been reviewed and determined to be current.

Custodians:

Army - GL
Navy - SA

Preparing Activity:

Army - GL

Review activities:

Army - MD
Navy - MC

User activities:

Army - CE
Navy - CG, YD

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