

MIL-C-2354F  
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 SUPERSEDING  
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# MILITARY SPECIFICATION

## COOKERS, STEAM, VERTICAL

This specification is approved for use by all Departments and Agencies of the Department of Defense.

### 1. SCOPE

1.1 Scope. This document covers vertical steam cookers heated by steam, gas, or electricity. Cooker compartments are provided with pan slides.

\* 1.2 Classification. The steam cookers shall be of the following types, models, styles, sizes, and classes as specified (see 6.2).

- |         |                                 |
|---------|---------------------------------|
| Type I  | - Steam heated.                 |
| Model A | - (Deleted see 6.5).            |
| Style 1 | - (Deleted see 6.5).            |
| Style 2 | - (Deleted see 6.5).            |
| Style 3 | - (Deleted see 6.5).            |
| Model B | - Steam-generating.             |
| Style 1 | - Deleted.                      |
| Type II | - Gas heated, steam-generating. |
| Style 1 | - Deleted.                      |

Beneficial comments (recommendations, additions, deletions) and any pertinent data which may be of use in improving this document should be addressed to: U.S. Army Natick Research and Development Center, Natick, MA 01760-5014, by using the self-addressed Standardization Document Improvement Proposal (DD Form 1426) appearing at the end of this document or by letter.

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- Type III - Electrically heated, steam-generating.
- Style 1 - Deleted
- Size 1 - 2 compartments.
- Size 2 - 3 compartments.
- Class 1 - Nonautomatic.
- Class 2 - Automatic.

## 2. APPLICABLE DOCUMENTS

\* 2.1 Government documents. Unless otherwise specified, the following documents of the issue in effect on date of invitation for bids or request for proposal, form a part of this document to the extent specified herein.

## SPECIFICATIONS

## FEDERAL

- PPP-B-601 - Boxes, Wood, Cleated-Plywood.
- PPP-T-60 - Tape, Packaging, Waterproof.

## MILITARY

- MIL-C-104 - Crates, Wood; Lumber and Plywood Sheathed, Nailed and Bolted.
- MIL-P-116 - Preservation-packaging, Methods of.
- MIL-P-43940 - Pans, Food Serving, Rectangular and Insets, Round.

## STANDARDS

## MILITARY

- MIL-STD-105 - Sampling Procedures and Tables for Inspection by Attributes.
- MIL-STD-129 - Marking for Shipment and Storage.

(Copies of documents required by manufacturers in connection with specific acquisition functions should be obtained from the contracting activity or as directed by the contracting officer.)

\* 2.2 Other publications. Unless otherwise specified, the following documents of the issue in effect on date of invitation for bids or request for proposal, form a part of this document to the extent specified herein.

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AMERICAN GAS ASSOCIATION (A.G.A.)

A.G.A. 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 NATIONAL STANDARDS INSTITUTE (ANSI)

- Z21.18 - Gas Appliance Pressure Regulators
- Z21.31 - Gas Counter Appliances
- Z21.41 - Quick-Disconnect Devices for Use with Gas Fuel
- Z21.45 - Flexible Connectors of Other Than All-Metal Construction for Gas Appliances
- Z83.15 - Gas Food Service Equipment - Kettles, Steam Cookers, and Steam Generators

(Application for copies should be addressed to the United States of America Standards Institute, 1430 Broadway, New York, NY 10018 or the American Gas Association, 8501 East Pleasant Valley Road, Cleveland, OH 49131.)

UNDERWRITERS LABORATORIES, INC.

UL 197 - Commercial Electric Cooking Appliances

(Application for copies of UL publications should be addressed to the Underwriters Laboratories Inc., 333 Pfingsten Road, Northbrook, IL 60062).

AMERICAN SOCIETY OF MECHANICAL ENGINEERS (ASME)

Low Pressure Heating Boiler Code - Section IV

(Application for copies of ASME publications should be addressed to the American Society of Mechanical Engineers, United Engineering Center, 345 East 47th Street, New York, NY 10017.)

NATIONAL SANITATION FOUNDATION (NSF)

Standard No. 4 - Commercial Cooking and Hot Food Storage Equipment

Listing of Food Service Equipment

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

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AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)

A 167 - Stainless and Heat-Resisting Chromium-Nickel Steel  
Plate, Sheet and Strip

D 3951 - Standard Practice for Commercial Packaging

(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 documents are generally available for reference from libraries. They are also distributed among technical groups and using Federal agencies.)

2.3 Order of precedence. In the event of a conflict between the text of this document and the references cited herein, the text of this document shall take precedence.

3. REQUIREMENTS

\* 3.1 Standard product. Cookers shall be new and the manufacturer's standard product except for any changes specified herein. All cookers for any one contract, including parts and assemblies thereof, shall be identical.

\* 3.2 Codes and standards. The cookers shall conform to the following code and standards requirements listed below. Satisfactory evidence that these requirements have been met shall be submitted to the Contracting Officer or his authorized representative prior to the start of production (see 4.3).

a. ASME. The boilers for the gas and electric heated cookers shall meet the applicable requirements of the ASME Low Pressure Heating Boiler Code - Section IV.

b. ANSI. The gas heated cookers shall conform to applicable requirements of Z83.15 for use with natural and liquefied petroleum gases.

c. UL. The automatic steam cookers and electrically heated cookers shall conform to applicable requirements of UL 197.

d. NSF. The cookers shall conform to the applicable requirements of NSF No. 4.

\* 3.3 Materials (see 6.4) and component. Materials and component shall be as specified herein. Materials not definitely specified, shall be of the quality normally used by the manufacturer on his standard steam cooker provided the completed items comply with all provisions of this document.

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

3.3.2 Castings. Castings shall be free from cracks, porosity, blowholes, or other casting imperfection detrimental to performance of the casting.

\* 3.4 Design and construction. The steam cookers shall primarily consist of a body inclosing individual cooking compartments, individual doors for each compartment, and piping, gages, and controls for safe and efficient operation. Cookers shall be provided with legs. The cooker shall be designed so that it will not require floor space greater than 37 inches deep by 45 inches wide including the door in closed position. Type I cookers shall be designed to cook food by contact with steam generated at the cooker. Type II and type III cookers shall be designed to cook food by generating steam at the cooker by means of gas and electricity, respectively. The cookers shall be designed to cook food at a pressure between 5 and 7 pounds per square inch (psi) steam pressure and shall be designed so that a compartment door either cannot be opened until the steam pressure to that compartment is shut off and the steam pressure is being released or, when applicable, the steam supply will shut off if the operator attempts to open the compartment door without first shutting off steam supply when tested as specified in 4.4.2. All compartments, boilers, piping, joints, and fittings shall be assembled to provide leakproof components and joints (see 4.4.1).

3.4.1 Body. The cooker body may be fabricated with or without an inner structural steel frame. If fabricated with an inner frame, the structural members shall be galvanized carbon steel. If fabricated without an inner frame, the body shall be of one-piece welded construction. The exterior sheet metal for all bodies shall be minimum 8 gauge 0.165 inch thick stainless steel specified in 3.3.1.

\* 3.4.2 Method of mounting.

\* 3.4.2.1 Legs. Cookers shall be provided with four adjustable legs formed or cast of stainless steel. Each leg shall be provided with a means for anchoring the cooker to the floor. The legs may be either removable or permanently attached by welding to the cabinet frame.

\* 3.4.2.1.1 Cabinet. Cookers shall have a cabinet for supporting the cooker body and to inclose the steam boiler. The cabinet shall be of welded angle-iron frame construction inclosed by an outer skin of not less than 20 gauge 0.0355-inch thick stainless steel. Access to the boiler from the front of the cooker shall be provided.

3.4.3 Compartments. The size 1 and size 2 cookers shall have two and three compartments, respectively, separated by partitions to allow for independent operation. Each compartment interior shall be minimum 11-13/16 inches high

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and width and depth shall be large enough to accommodate the amount of pans specified in 3.4.5. The interior walls, top, and bottom of all compartments shall be stainless steel specified in 3.3.1.

3.4.4 Doors. Cookers shall have separate doors for each compartment and may be either a double-door type or demountable doors with crossbars. The inside of the door shall be fitted with a replaceable heat and water-resistant moulded gasket, which shall form a steam-tight seal with the body when the door is closed (see 4.4.1). Wheel screws, if provided, shall have provisions for lubricating and wheel screws shall have replaceable bronze bushings, when applicable.

3.4.4.1 Double doors. When provided, double doors shall consist of an inner and an outer section. The outer door shall be made of stainless steel, cast iron, or cast aluminum alloy. The inner door shall be cast aluminum with reinforcing and shall be provided with a stainless steel or aluminum inner facing.

3.4.4.2 Demountable doors. When provided, demountable doors shall consist of a cast iron or cast aluminum alloy crossbar and a cast aluminum alloy door.

\* 3.4.5 Pan rack. Each compartment shall have a pan rack for supporting 12- by 20-inch cafeteria pans. The rack shall have pan slides at compartment sides and center for supporting the following depth pans 2-1/2 inch deep pans or four 4-inch deep pans. The rack shall be removable to allow use of two 6-inch deep pans as specified in 3.4.8. Pan rack and slides shall be fabricated of stainless steel and shall be capable of supporting pans containing 60 pounds without visible deformation (see 4.4.3).

\* 3.4.6 Controls. Each compartment shall have a steam inlet valve, exhaust valve, and automatic air-vent valve. Steam inlet and exhaust valves shall be not less than 1/2-inch Iron Pipe Size (IPS). The steam inlet valve and the exhaust valve for each compartment shall be interconnected in such a manner so as to operate simultaneously, and the operating lever shall be so positioned that the compartment door cannot be unlatched and opened while the steam inlet valve is open and the exhaust valve is closed or when applicable, the steam supply will shut-off if the operator attempts to open the compartment door without first shutting off steam supply (see 4.4.2). The steam inlet valve for each compartment shall be connected to a common vertical header which shall be fitted with a dial-type pressure gage and a safety valve set to operate at 8 psi (see 4.4.2). The exhaust valve for each compartment shall discharge into a vertical exhaust header terminating within 6 inches of the floor. Headers, related valves, and fittings shall be brass, copper, steel, or iron. The air-vent valve for each compartment shall discharge directly and separately into the atmosphere. The valves and headers shall be positioned on the left side of the cooker (to the left of a person facing the doors).

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All piping, valves, and headers shall be concealed in a minimum 20 gauge 0.0355 inch thick stainless steel inclosure, except air vent valves may be located outside. The inclosure shall have a hinged or removable panel to allow easy access for inspection and repair.

3.4.6.1 Class 2 cookers. Each compartment of the automatic cookers shall be provided with an automatic time control with audible signal and light. The automatic timer shall be a manual reset type with a 0- to 60-minute range. The timer shall automatically shut off the steam supply to the compartment and automatically release the steam pressure when the selected time has elapsed (see 4.4.2). The timer shall also activate an audible constant signal until turned off (see 4.4.2). The signal light shall indicate when steam is being supplied to the compartment (see 4.4.2). Unless otherwise specified (see 6.2), electrical timers, buzzers, and signal lights shall be suitable for use on nominal 120 volt, 60 Hertz (Hz), 1-phase, system. Controls shall allow manual operation for opening of compartments in event of power failure.

3.4.7 Pressure gage. The steam pressure gage shall be of the Bourdon tube indicating type, and graduated in pounds from 0 to 30 psi minimum and numbered at intervals of 6 pounds or less. Dial faces shall be not less than 2-3/4 inches diameter. When tested as specified in 4.4.2, pressure gage reading shall not vary more than plus or minus 1 psi compartment pressure. Provisions shall be made for protecting the gage from steam. Protection may be in the form of a copper tubing bent in a full circle to form a cool leg to protect the gage from steam or be a built-in syphon gage. Pressure gages shall be mounted in the inclosure specified in 3.4.6 with dials readily visible to the operator.

\* 3.4.8 Pans. Pans shall conform to size 2 (2-1/2 inches deep), size 3 (4 inches deep), or size 4 (6 inches deep) of MIL-P-43940. Pans shall be NSF approved and of two styles, with perforations and without perforations.

3.4.8.1 Perforated pans. The perforated pans shall have the bottom, sides, and ends perforated in accordance with the manufacturer's standard practice.

3.4.8.2 Unperforated pans. The unperforated pans shall be fitted with a cover. The cover shall be fabricated of not less than 20 gauge 0.0355-inch thick stainless steel as specified in 3.4.1. The cover shall have an edge turned down not less than 3/16-inch, and shall have a flush-type stainless steel handle.

\* 3.4.8.3 Quality of pans. Unless otherwise specified (see 6.2), pans per cooker shall be supplied in accordance with table I, as applicable.

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TABLE I. Pans per cooker

Number of compartments	Quantity and style of pan	Nominal pan depth inches
Two	4 perforated	2-1/2
	4 unperforated	2-1/2
	2 perforated	4
	2 unperforated	4
	2 perforated	6
	2 unperforated	6
Three	8 perforated	2-1/2
	8 unperforated	2-1/2
	2 perforated	4
	2 unperforated	4
	2 perforated	6
	2 unperforated	6

\* 3.4.9 Type I cookers.

3.4.9.1 Model B cooker. Each model B cooker shall have a boiler, automatic boiler water level control, a glass-tube water level gage, and boiler drain valve.

3.4.9.1.1 Model B boiler. The boiler shall be built into the base. The heating coil (see 6.3), shall be formed of copper or brass and shall be suitable for minimum steam pressures up to 50 psi maximum.

3.4.10 Type II cooker. Each type II cooker shall be furnished with an automatic boiler water level control, a low water cutoff, a glass-tube water level gage, boiler drain valve, automatic gas control valve, gas burners, and pilot light.

3.4.10.1 Type II boiler. The type II cooker shall have a boiler built into the base (see 3.2.a.) for generating steam for cooking.

3.4.10.2 Fuel system. The fuel system including burners shall be designed to efficiently burn natural or liquified petroleum gas (LPG) with appropriate conversion.

3.4.10.2.1 Natural gas. The unit shall be furnished 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 installed for natural gas shall be unpainted brass. An automatic pilot including a 100



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percent shut-off shall be provided on each unit. Cookers shall have minimum inputs of 90,000 British thermal units (Btu) for size 1 and 120,000 Btu for size 2 (see 4.4.2).

3.4.10.2.2 LPG. The contractor shall furnish black color-coded orifice hoods or spuds to convert the unit to operate on LPG. The contractor shall also furnish complete instructions for conversions to operate on LPG.

3.4.10.2.3 Accessories. A pressure regulator for natural gas conforming to Z21.18 shall be furnished with each unit. The unit shall be furnished with a connector to Z21.45 and a quick disconnect conforming to Z21.41.

3.4.10.2.4 Automatic ignition. All burners shall be equipped with a means for automatic ignition of gas. An automatic pilot device, complete shut-off type, shall be supplied on each type II cooker.

3.4.11 Type III cooker. Each type III cooker shall be furnished with an automatic boiler water level control, a low water cutoff, a glass tube water level gage, boiler drain valve, immersion heaters, contactor, and necessary switches and controls.

3.4.11.1 Type III boiler. The type III cooker shall have a boiler built into the base (see 3.2.a) to generate steam for cooking.

3.4.11.2 Heating elements. The immersion heaters for size 1 cookers shall have a total minimum input rating of 18 kilowatts (kw) and for size 2 shall have a total minimum input rating of 24 kw (see 4.5.2). Unless otherwise specified (see 6.2), the heating elements shall operate on a nominal 208-volt, 60 Hz, 3-phase system.

3.4.11.3 Contactors. The contactor shall be a 3 or 4 pole magnetic type with holding coils suitable for 50-60 Hz and the electrical characteristics specified (see 3.4.11.2).

3.5 Repair and maintenance. The cooker shall be constructed to allow for ready inspection, adjustment, service, and replacement of controls, plumbing fixtures, fittings, and electrical apparatus without requiring disassembly of any components other than panels or access covers.

3.6 Marking. Identification markings 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 applied by photosensitive means. The plate thickness shall be not less than 0.012 inch.

3.6.1 Identification. Each cooker identification and instruction plate shall include the manufacturer's model and serial number, name, trade name or trademark, of such known character as to be readily identifiable to the manufacturer. In addition, such information as required by ASME - Section IV, ANSI Z21.31 and UL 197, as applicable, shall also appear on the nameplate.

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3.6.2 Operating instructions. Unless otherwise specified (see 6.2), a stainless steel instruction plate shall be provided and shall be permanently attached to the cooker front. The plate shall have a thickness of 24 gauge 0.0235-inch and shall have the following information etched or die stamped thereon.

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## User's Instructions

1. If steam header has drain valves, close them when cooker is operating.
2. Do not obstruct or tamper with safety valves.
3. Do not tighten compartment doors too much; this causes gasket to wear out quicker. If doors are tightened by a handwheel, use just enough force to seal joints.
4. When cooker is not in use, leave doors open slightly to air out compartments.
5. Clean compartments of steam cooker daily and keep them free from sediment on the bottom. Never use steel wool on stainless steel equipment.
6. Wash out the inside by closing door, opening blow-off valves and turning on steam. Steam blows through check valves and piping and cleans out particles of food.
7. Clean strainer frequently.
8. Do not let steam pressure exceed manufacturer's recommendations between 5 and 7 pounds per square inch.
9. Occasionally open the blow-off valve near the bottom of the generator to remove sediments.

3.6.3 Lubricating instructions. The contractor shall affix to each cooker a stainless metal lubrication chart indicating all points requiring lubrication, grade of lubricant required, and the time interval when lubrication should be accomplished.

3.7 Finish. The cooker finish shall conform to NSF Standard No. 4 and as follows: Cast iron doors, exposed piping and fittings, hinges, and latches shall be chrome-plated in accordance with the manufacturer's standard practice.

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3.8 Workmanship. All components and assemblies of the cooker shall be free from dirt and other extraneous material, burrs, slivers, rough die, tool gauge, trim or and grind marks, dents, and cracks. Casting and molded parts if used, shall be free of sand, fins, pits, blow holes and sprues. External surfaces shall be free from sharp edges and sharp corners. Components shall be free of buckles, dents, punctures and malformation. Functioning components shall operate as intended, without abnormal force, and shall be adjustable.

3.8.1 Metal fabrication. Metal used in the fabrication on the cooker shall be free from kinks. Forming and shearing shall not cause damage to the metal.

3.8.2 Welding. The surfaces of parts to be welded shall be free from rust, scale, paint, grease and other foreign matter. Welds shall be continuous, smooth and uniform, and free of cracks, burn holes, undercuts, fissures or incomplete fusion. All scale shall be removed from the finish weld area.

3.8.3 Soldering. The surface of parts to be soldered shall be clean and free of rust, grease and other foreign matter. Soldering shall be adherent, complete and free of pin holes. All flux and flux residue shall be removed from the finished soldered area.

3.8.4 Fastening devices. Threaded fasteners and rivet holes shall be accurately punched or drilled and shall have burrs removed. Threaded fasteners shall not be broken, cracked, or stripped and shall be drawn tight. Rivets shall fill the hole completely and the heads shall be in full contact with the surface of the member and concentric with the hole. Washers or lockwashers shall be provided in accordance with standard commercial practice.

#### 4. QUALITY ASSURANCE PROVISIONS

\* 4.1 Responsibility for inspection. Unless otherwise specified in the contract or purchase order, the contractor is responsible for the performance of all inspection requirements as specified herein. Except as otherwise specified in the contract or purchase order, the contractor 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 document where such inspections are deemed necessary to assure supplies and services conform to prescribed requirements.

\* 4.1.1 Certificate of compliance. When certificates of compliance are submitted, the Government reserves the right to check test such items to determine the validity of the certification.

4.2 Quality conformance inspection. Unless otherwise specified, 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

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requirements of referenced document unless otherwise excluded, amended, modified, or qualified in this document or applicable purchase document.

\* 4.2.2 End item visual examination. The end item shall be examined for the defects listed in Table II. The lot size shall be expressed in units of cookers. The sample unit shall be one complete cooker. The inspection level shall be II and the acceptable quality level (AQL), expressed in terms of defects per hundred units, shall be 2.5 for major defects and 6.5 for total (major and minor combined) defects.

TABLE II. End item visual defects

Examine	Defect	Classification	
		Major	Minor
Standard product	Item not in accordance with manufacturer's standard product, except for changes necessary to comply with document requirements	X	
Finish	Not in accordance with NSF	X	
	Edges and surfaces not smooth	X	
	Not free of discoloration or stains		X
Construction and workmanship (general)	Component missing	X	
	Any wearing part not accessible for adjustment or replacement	X	
	Any component fractured or malformed	X	
	Any component misplaced or not in alignment	X	
	Any burr, sliver, sharp edge, rough die, tool, gouge, trim, or grind marks	X	
	Any component buckled, dented, punctured, or malformed	X	
	Functioning component that is inoperative or will not operate as intended	X	
	Functioning component that requires abnormal force to operate		X
	Any adjustable assembly not properly adjusted to perform the intended function	X	
	Not fabricated of material specified	X	
	Component not readily accessible for inspection, adjusting and servicing where required	X	

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TABLE II. End item visual defects

Examine	Defect	Classification	
		Major	Minor
Construction and workmanship (general) (cont'd)			
Castings (when applicable)	Cracked, porous, or blowholes	X	
Welding (when applicable)	Missing	X	
	Not continuous, not smooth, not uniform, burn holes, cracks, fissures, incomplete fusion	X	
	Not finished to blend to adjacent surface	X	
	Not free from flux, scale, paint, or areas of other foreign material	X	
Soldering (when applicable)	Not adherent or incomplete	X	
	Not clean (flux or flux residue not removed) or pin holes in solder	X	
Threaded fasteners	Missing, broken, stripped, or fractured	X	
	Loose	X	
Rivets (when applicable)	Loose, not in full contact with members riveted	X	
Mounting: Style 1	Adjustable legs missing or not as specified	X	
	Means for anchoring cookers to floor missing	X	
Doors	Gasket missing or not as specified	X	
	Inner lining missing (double door)	X	
	Wheel screw missing	X	
	Not properly lubricated	X	
	Wheel bushing not replaceable	X	
Pan rack	Rack missing or not as specified	X	
	Rack not removable	X	
	Pan slides not as specified	X	
	Pan binds in slides	X	

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TABLE II. End item visual defects (cont'd)

Examine	Defect	Classification	
		Major	Minor
Construction and workmanship (general) (cont'd)			
Controls	Missing or not as specified	X	
	Controls not accessible for servicing	X	
	Air-vent valve and headers not located as specified	X	
	Piping, valves, and headers not concealed in steel inclosure (except air-vent valves)	X	
	Panel not hinged or removable	X	
Automatic controls (as applicable)	Automatic time control, signal, or light missing or not as specified	X	
Pressure gage	Missing	X	
	Dial not graduated as specified	X	
	Not mounted in inclosure	X	
	Not readily visible to operator	X	
Pans	Not seamless 2-1/2 and 4-inch deep pans or not as specified	X	
	Cover missing (unperforated pans)	X	
	Cover handle missing or not as specified	X	
Assembly	Unit perceptibly out of square or alignment	X	
Marking for identification	Missing, incomplete, not legible, not specified type or size, not affixed in the prescribed manner	X	
Marking (lubrication and operation instructions)	Missing, incomplete, not legible	X	

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\* 4.2.3 End item dimensional examination. The end item shall be examined for conformance to the dimensions specified in this document. Any dimension not within the specified tolerance shall be classified as a defect. The lot size shall be expressed in units of cookers. The sample unit shall be one complete cooker. The inspection level shall be S-2 and the AQL, expressed in terms of defects per hundred units, shall be 4.0.

\* 4.2.4 End item pan support testing. One cooker from the initial lot shall be tested as specified in 4.4.3. Any test failure shall be cause for rejection of the lot.

\* 4.2.5 End item leakage and operational testing. Every cooker shall be tested for leakage as specified in 4.4.1 and for operation as specified in 4.4.2. Any cooker which fails any of the tests shall be rejected.

\* 4.2.6 Packaging inspection. An examination shall be made to determine that the preservation, packing, and marking comply with the section 5 requirements. Defects shall be scored in accordance with table III. The sample unit shall be one shipping container fully packaged. The lot size shall be the number of shipping containers in the inspection lot. The inspection level shall be S-2 and the AQL, expressed in terms of defects per hundred units, shall be 4.0.

TABLE III. Packaging defects

Examine	Defect
Marking	Missing, incorrect, illegible, of improper size, location, sequence, or method of application
Materials	Components missing, damaged, otherwise defective, or nonconforming
Workmanship	Bulged or distorted container

4.3 Certificate compliance examination. Certifications, certified test reports, or listing marks for codes and standards, as applicable, submitted in accordance with 3.2, shall be examined and validated as proof of compliance (see 4.3.1 through 4.3.4).

4.3.1 ASME code. Acceptable evidence of meeting the applicable requirements of the ASME "Low Pressure Heating Boiler Code - Section IV" shall be a certificate stating that the boiler bears the ASME Symbol.

4.3.2 ANSI. Acceptable evidence of meeting applicable requirements of 283.15 shall be a reproduced copy of the American Gas Association, Inc.

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(A.G.A.) Appliance Certificate; a listing of the cooker in the latest A.G.A. Directory of Certified Appliances and Accessories; or a certified test report from a nationally recognized independent testing laboratory, acceptable to the Government, certifying that the gas heated cooker has been tested and conforms to the applicable requirements of ANSI Standard No. Z83.15 for use with natural and liquefied petroleum gases.

4.3.3 UL. Acceptable evidence of meeting applicable requirements of UL Standard No. 197 shall be a UL listing mark, or a certified test report from a recognized independent testing laboratory, acceptable to the Government, indicating that the automatic cookers and the electric heated cookers have been tested and conform to the applicable requirements of UL Standard No. 197.

4.3.4 NSF. Acceptable evidence of meeting the requirements of NSF Standard No. 4 shall be one of the following:

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

(2) A certification for the cooker issued by NSF under their special one-time contract evaluation/certification service, or

(3) A certified test report, acceptable to the contracting officer with the advice of the Army Surgeon General from an independent testing laboratory, indicating that the steam cooker has been tested and conforms to the specified NSF Standard.

\* 4.4 Methods of inspection.

4.4.1 Leakage test. A saturated steam pressure of 7 psi shall be applied to each compartment for at least 3 minutes to determine conformance with leakage requirements of 3.4 and 3.4.4. During the test, the compartments, boilers and all piping, fittings, connection, and door seals shall be checked for leakage.

4.4.2 Operational test. The cooker shall be given an operational test to determine that controls and valves operate as specified in 3.4 and 3.4.6 (and 3.4.6.1, if applicable). During this test, the Btu(w) input of the type II cookers shall be checked for conformance with 3.4.10.2.1 and the kw input of the type III cookers shall be checked for conformance with 3.4.11.2. Pressure gauge accuracy shall be tested at 6 psi compartment pressure to determine conformance with 3.4.7.

4.4.3 Pan support test. Weights totaling 60 pounds shall be placed in a 2-1/2-inch deep pan and the pan slid into one set of slides. The pan shall be left in this position for 2 minutes and then withdrawn one-third of the way out and left in this position for 2 minutes more. At the end of the 4



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minutes, the pan shall be removed and the procedure repeated for all slides and the pan rack and slides shall be examined to determine conformance with nondeformation requirements of 3.4.5.

\* 5. PACKAGING

\* 5.1 Preservation. Preservation shall be level A or Commercial, as specified (see 6.2).

5.1.1 Level A.

5.1.1.1 Cleaning and drying. All exposed, uncoated, ferrous metal surfaces, except stainless steel, of each cooker, shall be cleaned process C-1 of MIL-P-116 and thoroughly dried.

5.1.1.2 Application of preservative. Surface cleaned as specified shall be coated with type P-14 preservative of MIL-P-116.

5.1.1.3 Sealing of openings. All openings, such as inlets, outlets, vents, valves, and the face of the steam gage shall be sealed with tape conforming to type IV, class 1 of PPP-T-60.

5.1.1.4 Pan and covers. Pans and pan covers shall be secured within the compartment of the cooker in such a manner as to prevent movement and damage while in transit.

5.1.1.5 Doors. The doors of the cooker shall be securely closed so as to prevent opening while in transit.

5.1.2 Commercial. Cookers shall be preserved in accordance with ASTM D 3951.

\* 5.2 Packing. Packing shall be level A, B, or Commercial as specified (see 6.2).

5.2.1 Level A packing. Each cooker, preserved as specified in 5.1, shall be packed in a plywood crate conforming to type I, class 2, style a of MIL-C-104. Cookers shall be secured with lumber blocking and bracing. Anchoring, blocking and bracing shall be in accordance with the appendix of MIL-C-104. A minimum clearance of 1-inch shall be maintained between the legs of the cookers and the inside surface of the bottom of the shipping container.

5.2.2 Level B packing. Each cooker, preserved as specified in 5.1, shall be packed in a cleated plywood shipping container conforming to domestic type, style A or B of PPP-B-601. Each shipping container shall be provided with skids in accordance with the applicable requirements of the container specification, except that the ends of skids shall be beveled one-half the

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thickness at a 45 degree angle and notched to provide clearance for longitudinal strapping. Cookers shall be secured with lumber blocking and bracing. A minimum clearance of 1-inch shall be maintained between the legs of the cookers and the inside surface of the bottom of the shipping container.

5.2.3 Commercial packing. Cookers preserved as specified in 5.1, shall be packed in accordance with ASTM D 3951.

\* 5.3 Marking. In addition to any special marking required by the contract or purchase order, shipping containers shall be marked in accordance with MIL-STD-129 or ASTM D 3951, as applicable.

## 6. NOTES

6.1 Intended use. The cookers are intended for cooking food in kitchens of permanent Military installations.

\* 6.2 Ordering data. Acquisition documents should specify the following:

- a. Title, number, and date of this document.
- b. Type, model, size, and class of cooker required (see 1.2).
- c. Electrical requirements if other than specified (see 3.4.6.1 and 3.4.11.2).
- d. Quantity and size of additional pans required (see 3.4.8.3).
- e. When an instruction plate is not required (see 3.6.2).
- f. Selection of applicable levels of preservation and packing (see 5.1 and 5.2).

\* 6.3 Steam requirements. Steam pressure up to 30 psi maximum must be in the incoming steam line for proper operation of the type I, model B steam coil (see 3.4.9.1.1).

\* 6.4 Recycled material. It is encouraged that recycled material be used when practicle as long as it meets the requirements of this document.

\* 6.5 Deletions. The following items have been deleted from this document because there are no military users for these items:

Styles 1, 2 and 3 have been deleted from the classification and have been included in the basic design.

6.5.1 Changes from previous issue. The margins of this document are marked with an asterisk (\*) to indicate where changes (additions, modifications, corrections, deletions) from the previous issue were made. This was done as a convenience only and the Government assumes no liability whatsoever for any inaccuracies in these notations. Bidders and contractors are cautioned to

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evaluate the requirements of this document based on the entire content irrespective of the marginal notations and relationship to the last previous issue.

Custodians:

Army - GL  
Navy - YD  
Air Force - 99

Preparing activity:

Army - GL  
Project No. 7310-0693

Review activities:

Army - MD  
Navy - MC  
Air Force - 84  
DLA - GS

**STANDARDIZATION DOCUMENT IMPROVEMENT PROPOSAL***(See Instructions - Reverse Side)***1. DOCUMENT NUMBER**

MIL-C-2354F

**2. DOCUMENT TITLE**

Cookers, Steam, Vertical

**3a. NAME OF SUBMITTING ORGANIZATION****4. TYPE OF ORGANIZATION (Mark one)**☐

VENDOR

☐

USER

☐

MANUFACTURER

☐

OTHER (Specify): \_\_\_\_\_

**b. ADDRESS (Street, City, State, ZIP Code)****5. PROBLEM AREAS****a. Paragraph Number and Wording:****b. Recommended Wording:****c. Reason/Rationale for Recommendation:****6. REMARKS****7a. NAME OF SUBMITTER (Last, First, MI) - Optional****b. WORK TELEPHONE NUMBER (Include Area Code) - Optional****c. MAILING ADDRESS (Street, City, State, ZIP Code) - Optional****8. DATE OF SUBMISSION (YYMMDD)**