

| INCH-POUND |

OO-D-1390B  
AMENDMENT 3  
November 30, 1992  
SUPERSEDING  
INT. AMENDMENT 2(SH)  
6 April 1992  
SUPERSEDING  
AMENDMENT 1  
4 October 1984

FEDERAL SPECIFICATION

DISHWASHING MACHINES, SINGLE TANK (RACK, MANUAL AND CONVEYOR)  
AND DOUBLE TANK (RACK, CONVEYOR), COMMERCIAL

This amendment, which forms a part of OO-D-1390B, dated 17 October 1983, is approved by the Commissioner, Federal Supply Service, General Services Administration, for the use of all Federal agencies.

PAGE 1

- \* 1.2.1, Delete: "16 by 16 - inch rack," from Type I description.

Add the following sizes to Type I:

"Size 35-20 - 20 by 20 inch racks at 35 racks per hour  
Size 45-20 - 20 by 20 inch racks at 45 racks per hour"

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- \* 2.1, Federal Specification, delete the following:

"P-D-1800 - Dishwashing Compound, Machine"

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- \* 2.1, Military Specifications, delete the following:

"MIL-M-11495 - Meter, Detergent Concentration for Dishwashing Machines  
MIL-R-24039 - Rack and Cylinder for Mechanical Dishwashing Machine"

Military Standards, add the following:

- "MIL-STD-167/1 - Mechanical Vibration of Shipboard Equipment (Type I - Environmental and Type II - Internally Excited)
- MIL-STD-1472 - Human Engineering Design Criteria for Military Systems, Equipment and Facilities"

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\* 2.2, ASTM, Delete:

- "A120 - Pipe, Steel, Black and Hot-Dipped Zinc-Coated (Galvanized) Welded and Seamless for Ordinary Uses"

ASTM, Add:

- "ASTM A53 - Pipe, Steel, Black and Hot-Dipped Zinc-Coated (Galvanized) Welded and Seamless
- ASTM F861 - Commercial Dishwashing Racks"

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\* 3.7.5, line 2, Delete: "ASTM A120", and substitute: "ASTM A53".

\*Add the following paragraphs:

"3.8.2 Inclined operation. The dishwashing machine shall operate satisfactorily when inclined at an angle of 15 degrees each side of the vertical in each of two vertical planes at right angles to each other, with no spillage of fluid or product when tested as specified in 4.5.6.

3.8.3 Environmental suitability. When specified for shipboard use (see 6.2), the dishwashing machine shall be capable of withstanding ship's vibration and motion. Controls, switches, moving parts and electrical circuits shall operate under shipboard conditions without malfunction, binding, excessive looseness, or damage when tested as specified in 4.5.7."

\* 3.9, line 5, Type I, Delete: "Not less than 10 inches above the tracks." and substitute: "Not less than 12-1/2 inches above the tracks."

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\* 3.9.6, Delete the second and third sentences, and substitute: "The steam boosters shall raise the final rinse water temperature to within the range of 180° to 195°F."

\* 3.9.7, line 3, Delete: "from the range of 120° to 140°F".

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\* 3.9.8.1, line 6, Delete: "conforming to P-D-1800".

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\* 3.9.11, after the last sentence, add the following: "For Navy use, thermometer faceplate marking is not required."

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\* 3.9.13, line 7, Delete: "or nickel-copper alloy", and substitute: "or suitable corrosion-resisting material."

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3.9.16, line 25: Delete "corrosion-resisting steel not less than 14-gage" and substitute "stainless steel not less than 16 gage."

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\* 3.10.3.1, add the following new paragraph:

"3.10.3.1 High voltage labels. When specified for shipboard use (see 6.2), a Danger High Voltage label shall be affixed to the equipment's outer case assembly, on or adjacent to each service access cover and adjacent to one of the fasteners which secures the cover. A high voltage warning label shall also be placed near the high voltage components inside the equipment. The label shall include but is not limited to the following warnings:

- a. A warning of high voltage
- b. Power supply must be disconnected before using
- c. Access covers must be in place during use
- d. Servicing should be done by authorized individuals"

\* 3.11.1, Delete the second and third sentences, and substitute: "For type I dishwashers, (sizes 35-16 and 45-16) use 16-inch by 16-inch racks; for types I (sizes 35-20 and 45-20), II, III, and IV dishwashers, use 20-inch by 20-inch racks. Racks and cylinders shall conform to the requirements of ASTM F861."

\*Table I, add to the table under nominal size: "35-20" and "45-20", and under rack and cylinder type, add:

	I	IA	IC	ID	IE	IG	II	IIA	IIC	IID	III	IIIB	V	VI
"35-20	3	--	--	--	--	--	3	--	--	--	2	--	12	12
45-20	3	--	--	--	--	--	3	--	--	--	2	--	12	12"

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\* 3.16, after the last sentence add the following: "When specified for shipboard use, requirements and test limits of class A4 for surface ships and class A5 for submarines of MIL-STD-461 apply. Shipboard equipment shall meet the emission and susceptibility requirements for CE01, CE02, and RE02."

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\*Add the following paragraph:

"3.20 Human factors criteria. Human factors engineering criteria, principles, and practices, as defined in MIL-STD-1472, shall be incorporated into the design of the dishwashing machine. The equipment shall be designed such that all maintenance and operation shall permit safe and efficient performance by the 5th percentile female to the 95th percentile male as defined in sections 5.6 and 5.9 of MIL-STD-1472. Controls, switches and gages shall be selected and integrated into the design of the dishwashing machine so as to meet the applicable requirements of sections 5.2 and 5.4 of MIL-STD-1472 and they shall be clearly and appropriately labeled to identify function. The clearance or free area required around an item shall permit an individual with applicable body dimensions and physical capabilities to safely operate, maintain, remove, or replace that item. When establishing accessibility requirements, both physical and visual access must be provided along with access for the use of any tools, test equipment, or replacement parts needed. When inspecting for defects and performing tests (see section 4), the equipment shall conform to the human factors engineering considerations listed herein."

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\* 4.5.1, add to the seventh sentence: "except for type I machines, the pumped wash temperature of 150° to 160°F need not be maintained during the one hour operational test."

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\* 4.5.5, after the last sentence, add: "When required for shipboard use, the unit shall be tested by the contractor in accordance with test methods CE01, and RE02 of MIL-STD-462."

\*Add the following paragraphs:

"4.5.6 Inclined operational test. Position the dishwasher with the base set at an angle of 15 degrees, then operate the dishwasher for 30 seconds at each side of the vertical in each of two vertical planes at right angles to each other. At each of these positions observe for conformance with specified requirements in 3.8.2. For the test, the tanks of the dishwasher shall be filled with the required amount of water.

4.5.7 Shipboard environmental test. The dishwasher under normal operating conditions, shall be tested in accordance with MIL-STD-167/1, type I equipment. The dishwasher shall be secured to the test machine in the same manner that it will be secured on shipboard (see 3.9.20). Failure of the dishwasher to perform its function during and after testing, or to meet requirements of 3.8.3, shall constitute failure of this test."

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\* 6.2 (ff), Delete: "(see 6.7)." and substitute: "(see 3.8.2, 3.8.3, and 6.7)."

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6.7, Add:

- "o. Type II, size 50-20 dishwashing machines for shipboard use shall be so constructed to have an overall width of not more than 25-3/4 inches and height of not more than 65-1/2 inches designed so as to pass through a 26-inch by 66-inch hatch opening without disassembly of any components.
- \* p. Due to pitch and roll of dishwashing machines aboard ship, electric heaters, when furnished, will require special immersion heaters and a heater control package designed to permit operation of electric immersion heaters efficiently during normal service as well as under adverse conditions when the heating elements may become exposed to air during pitch and roll conditions.
- \* q. Steam boosters, when required, will be furnished mounted on a stainless steel supporting stand for remote installation."

\*Add the following paragraph:

"6.9 Technical manuals. The requirement for technical manuals should be considered when this specification is applied on a contract. If technical manuals are required, military specifications and standards that have been cleared and listed in DOD 5010.12-L, Acquisition Management Systems and Data Requirements Control List (AMSDL) must be listed on a separate Contract Data Requirements List (DD Form 1423), which is included as an exhibit to the contract. The technical manuals must be acquired under separate contract line item in the contract."

The margins of this amendment are marked with an asterisk to indicate where changes (additions, modifications, corrections, deletions) from the previous amendment 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 evaluate the requirements of this document based on the entire content irrespective of the marginal notations and relationship to the last previous amendment.

MILITARY INTERESTS:

Custodians

Army - GL  
Navy - YD  
Air Force - 99

Review Activities

Army - MD  
Navy - MC, MS, SA, SH  
Air Force - 84  
DLA - GS

CIVIL AGENCY COORDINATING ACTIVITIES:

VA - OSS  
GSA - FSS  
EPA

PREPARING ACTIVITY:

Navy - YD

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