Designation: F2520 – 05 (Reapproved 2012)

An American National Standard

Standard Specification for Reach-in Refrigerators, Freezers, Combination Refrigerator/Freezers, and Thaw Cabinets[1]

This standard is issued under the fixed designation F2520; the number immediately following the designation indicates the year of original adoption or, in the case of revision, the year of last revision. A number in parentheses indicates the year of last reapproval. A superscript epsilon (ε) indicates an editorial change since the last revision or reapproval.

1. Scope

1.1 This specification covers the basic design and function of temperature regulated, continuous duty commercial, and marine refrigerators, freezers, combination refrigerator/freezers and thaw cabinets. The equipment will be stationary and of a vertical or horizontal type.

1.2 Equipment covered under this specification may contain a substance (or be manufactured with a substance) that harms public health and environment by destroying ozone in the upper atmosphere. This specification does not purport to address environmental regulations. It is the responsibility of the user of this specification to comply with environmental regulations.

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

1.4 *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 and health practices and determine the applicability of regulatory limitations prior to use.*

2. Referenced Documents

2.1 *ASTM Standards:*[2]

A167 Specification for Stainless and Heat-Resisting Chromium-Nickel Steel Plate, Sheet, and Strip

B280 Specification for Seamless Copper Tube for Air Conditioning and Refrigeration Field Service

D3951 Practice for Commercial Packaging

F760 Specification for Food Service Equipment Manuals

F1166 Practice for Human Engineering Design for Marine Systems, Equipment, and Facilities

2.2 *ANSI/UL Standards:*[3]

ANSI/UL 303 Refrigeration and Air-Conditioning Condensing and Compressor Units

ANSI/UL 471 Commercial Refrigerators and Freezers

ANSI/UL 866 Outlet Boxes and Fittings for Use in Hazardous Locations, Class I, Groups A, B, C, and D and Class II, Groups E, F, and G

ANSI/UL 969 UL Standard for Marking and Labeling Systems

2.3 *NSF/ANSI International Standards:*[4]

NSF/ANSI 7 Food Service Refrigerators and Freezers

NSF/ANSI 51 Plastic Materials and Components Used in Food Service

2.4 *ASHRAE Standard:*[5]

ASHRAE 15 Safety Code for Mechanical Refrigeration

2.5 *NFPA Standard:*[6]

NFPA 70 National Electrical Code, Article 500, Hazardous Locations

2.6 *Canada National Standard/Canadian Standard:*[7]

CAN/CSA C22.2 #120-M91 Refrigeration Equipment

2.7 *Federal and Military Documents:*[8]

MIL-STD-167/1 Mechanical Vibrations 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

MIL-STD-1399/300 Interface Standard For Shipboard Systems Section 300A Electric Power, Alternating Current

MIL-R-12323 Refrigerators and Related Equipment, Packaging and Packing

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[2] For referenced ASTM standards, visit the ASTM website, www.astm.org, or contact ASTM Customer Service at service@astm.org. For *Annual Book of ASTM Standards* volume information, refer to the standard's Document Summary page on the ASTM website.

[3] Available from American National Standards Institute (ANSI), 25 W. 43rd St., 4th Floor, New York, NY 10036.

[4] Available from NSF International, P.O. Box 130140, 789 N. Dixboro Rd., Ann Arbor, MI 48113-0140.

[5] Available from American Society of Heating, Refrigerating, and Air-Conditioning Engineers, Inc. (ASHRAE), 1791 Tullie Circle, NE, Atlanta, GA 30329.

[6] Available from National Fire Protection Association (NFPA), 1 Batterymarch Park, Quincy, MA 02269-9101.

[7] Available from Canadian Standards Association (CSA), 178 Rexdale Blvd., Toronto, ON M9W1R3, Canada.

[8] Available from Standardization Documents Order Desk, DODSSP, Bldg. 4, Section D, 700 Robbins Ave., Philadelphia, PA 19111-5098.

3. Terminology

3.1 *Definitions:*

3.1.1 *ambient air temperature*—temperature of the air surrounding the exterior of the cabinet or machinery compartment.

3.1.2 *automatic defrost*—process where heat is automatically introduced into the cooling coils to dissipate any ice or frost buildups on the coil.

3.1.3 *capacity*—term that refers to the total cubic foot area of the interior storage.

3.1.4 *condensing units*—each unit shall consist of a compressor, condenser, receiver (if required), fan, and motor.

3.1.5 *evaporator coils (forced air)*—forced circulation type cooling unit consists of a cooling coil, fan with motor, and enclosing casing.

3.1.6 *evaporator coils (static)*—refrigerated inner liner with the refrigerating coils incorporated in or attached to the walls of the unit.

3.1.7 *explosion proof*—refers to a specific requirement for equipment used in hazardous atmospheres.

3.1.8 *horizontal cabinet*—any cabinet of undercounter or counter height design.

3.1.9 *modular*—particular method of cabinet construction, which allows the cabinet and all of its components to be dissembled and reassembled for ease of installation.

3.1.10 *positive latching hardware*—any latching mechanism that requires that the latch be disengaged before the door can be opened.

3.1.11 *thaw*—equipment designed to accelerate the defrosting process of perishable products.

3.1.12 *undercounter*—cabinet which has a maximum height of no more than 36 in. (916 mm).

3.1.13 *unitary*—single piece cabinet construction.

3.1.14 *vertical cabinet*—any cabinet with single or multiple door arrangements whose height is its greatest dimension and is in excess of 36 in. (914 mm).

4. Classification

4.1 *General*—Refrigerators, freezers, combination refrigerator/freezers or thaw cabinets covered by this specification are classified by types, grades, classes, styles, and sizes.

4.2 *Type:*

4.2.1 *Type I*—Refrigerator.

4.2.2 *Type II*—Freezer.

4.2.3 *Type III*—Combination refrigerator/freezer.

4.2.4 *Type IV*—Thaw cabinet.

4.3 *Grades:*

4.3.1 *Grade 1*—Vertical cabinet.

4.3.2 *Grade 2*—Horizontal cabinet.

4.4 *Classes:*

4.4.1 *Class 1*—Modular construction.

4.4.2 *Class 2*—Unitary (single piece) construction.

4.5 *Sizes*—The following tables depict the sizes of the various types of units. This specification does not purport to address all of the sizes that may be available, but is an overview of the most common sizes used in the industry today.

4.5.1 *Vertical Cabinet, Style 1 (Refrigerator or Freezer):*

Sizes ft^3 (L)	Net Capacity Storage ft^3 (L)	Maximum Width in. (mm)	Maximum Overall Depth in. (mm)	Maximum Height without Legs in. (mm)
5 (142)	4 (113)	33 (838)	27 (686)	64 (1626)
10 (283)	9 (255)	32 (813)	29 (737)	66 (1676)
15 (425)	14 (396)	39 (991)	29 (737)	72 (1829)
20 (566)	19 (538)	51 (1295)	29 (737)	74 (1880)
30 (850)	29 (821)	58 (1473)	32 (813)	74 (1880)
40 (1133)	39 (1104)	68 (1727)	34 (864)	74 (1880)
65 (1841)	64 (1812)	86 (2184)	34 (864)	74 (1880)
85 (2407)	84 (2379)	112 (2845)	34 (864)	74 (1880)

4.5.1.1 Depth shown is maximum overall with door installed.

4.5.1.2 Height does not include legs when applicable.

4.5.2 *Horizontal Cabinet, Style 2 (Refrigerator or Freezer):*

Sizes ft^3 (L)	Net Capacity Storage ft^3 (L)	Maximum Width in. (mm)	Maximum Overall Depth in. (mm)	Maximum Height without Legs in. (mm)
5 (142)	4.5 (127)	40 (1016)	28 (711)	28 (711)
10 (283)	8 (227)	49 (1245)	28 (711)	28 (711)
20 (566)	18 (510)	84 (2134)	28 (711)	28 (711)
30 (850)	27 (765)	115 (2921)	28 (711)	28 (711)

4.5.2.1 Depth shown is maximum overall with door installed.

4.5.2.2 Height does not include legs when applicable.

4.5.3 *Combination Refrigerator/Freezer Cabinet:*

Sizes ft^3 (L)	Total Capacity Storage ft^3 (L)	Low Temperature Capacity ft^3 (L)	Maximum Width in. (mm)	Maximum Overall Depth in. (mm)	Maximum Height without Legs in. (mm)
10 (283)	9 (255)	3 (85)	31 (787)	29 (737)	66 (1676)
15 (425)	14 (396)	6 (170)	39 (991)	29 (737)	72 (1829)
20 (566)	19 (538)	8 (227)	51 (1295)	29 (737)	74 (1880)
30 (850)	29 (821)	13 (368)	64 (1626)	32 (813)	74 (1880)
40 (1133)	39 (1104)	18 (510)	68 (1727)	34 (864)	74 (1880)

4.5.3.1 Depth shown is maximum overall with door installed.

4.5.3.2 Height does not included legs when applicable.

4.5.4 *Thaw Cabinets:*

Size	Maximum Width in. (mm)	Maximum Depth in. (mm)	Maximum Height in. (mm)
One Section	48 (1219)	32 (813)	84 (2134)
Two Section	72 (1829)	32 (813)	84 (2134)

4.6 *Styles:*

4.6.1 *Style 1*—Manual loading, stationary or fixed shelving.

4.6.2 *Style 2*—Roll-in cart loading.

5. Ordering Information

5.1 *Ordering Data*—Purchasers shall select refrigerators, freezers, combination refrigerator/freezers or thaw cabinet equipment 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, grade, class, style, and size of unit required,

5.1.3 Desired exterior and interior finishes,

5.1.4 Quantity to be furnished,

5.1.5 Electrical power supply characteristics; voltage, phase, frequency,

5.1.6 Number of doors, swing, type (solid or glass),

5.1.7 Accessory equipment: such as spare parts, maintenance parts required, or other options available by the manufacturer, or a combination thereof,

5.1.8 When Federal/Military procurement is required, review and implement the applicable supplementary requirements (see S1 through S8.8.3),

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, (see 14.1 through 14.3),

5.1.10 Level of preservation and packing required if other than as stated in Practice D3951 (see 17.1),

5.1.11 Other custom features or requirements desired, and

5.1.12 Labeling requirements (if different than 15.1).

6. Materials and Manufacture

6.1 *General*—Refrigerators, freezers, combination refrigerator/freezers or thaw cabinets shall conform to NSF/ANSI No. 7. Materials used shall be new and free from defects or reclaimed and recycled conforming to the same quality standards for new materials.

6.1.1 *Corrosion-Resistant Steel*—Corrosion-resistant steel shall conform to Specification A167 and the requirements on 300 or 430 series of stainless steels as applicable.

6.1.2 *Non-Corrosion Resistant Steel*—Mild steel used shall have been treated with a coating of either zinc, chrome, nickel, paint, or similar material to inhibit corrosion.

6.1.3 *Aluminum*—Aluminum alloys shall conform to the requirements of NSF/ANSI No. 7.

6.1.4 *Seamless Copper Tubing*—All refrigerant lines used in the system shall be of seamless copper tubing conforming to Specification B280.

6.1.5 *Hardware, Fittings, Fasteners*—All materials used as hardware, fittings, and fasteners shall be of a corrosion-resistant material.

6.1.6 *Ozone Depleting Compounds*—Type one ozone depleting compounds shall not be used as a refrigerant or as a component of foam insulation and shall be the manufacturer's standard chemicals.

7. Design and Construction

7.1 *General*—Refrigerators, freezers, combination refrigerator/freezers, or thaw cabinets shall be the manufacturer's standard product delivered assembled, ready for mounting, and connected to electricity and used as applicable. Storage temperatures of units shall meet the requirements specified by NSF/ANSI No. 7.

7.2 *Refrigeration Equipment:*

7.2.1 *Condensing Unit*—Each condensing unit shall conform to the requirements of ANSI/UL 303. Service lines for the attachment of manifold gages and accessories, shall be provided on both the low and high sides of the system. The capacity of each condensing unit shall be adequate for the intended application.

7.2.2 *Condensing Unit Location*—On vertical type cabinets, the condensing unit may be located on either the top or bottom of the storage compartment. With a horizontal configuration, the condensing unit can be located either to the left or right of the storage compartment unless it is remote.

7.2.3 *Refrigerated Metering*—If a thermal expansion valve is used, it shall adhere to the ASHRAE 15, which addresses system working pressures.

7.2.4 *Evaporated Coil Assembly (Forced Air)*—The coiling coil shall be finned tube construction using copper tubes. The coil tube sheets shall be aluminum, copper, or brass. The fan hub shall be corrosion resistant. The fan and motor shall be direct mounted. The grill opening, shroud, and enclosing casing shall be corrosion resistant.

7.2.5 *Condensate Drain*—All models incorporating forced air evaporators shall provide a thermostatically controlled vaporizer pans as means of disposing of evaporator runoff. An alternate means of condensate evaporation, which allow connection to plumbing, is acceptable. When condensate evaporators are used, they shall have a minimum capacity of 32 oz.

7.3 *Modular Construction:*

7.3.1 *Panel Construction*—Modular units consisting of panel construction must fit together in such a way that, when reassembled, the panels cannot move more than 1/16 in. (1.6 mm) in any direction.

7.3.2 *Fastening Methods*—For modular constructed units, in the assembly process, only those types of fastening methods can be used which would allow the unit to be disassembled at a future date without the use of special tools or methods which might damage or disfigure the unit. No permanent fastening means of the sub-components to one another, such as welding, brazing, soldering, or the use of epoxies or other adhesives is acceptable.

7.3.3 *Access Caps*—The caps used to seal the panel fastener access hole, when installed shall be watertight and have flared edges. Access caps, as installed, shall conform to NSF/ANSI No. 7.

7.3.4 *Modular Refrigeration Systems*—The refrigeration system shall be furnished fully assembled, and operational. It will have been previously charged, tested, and all controls properly adjusted. The system shall have the capability, if being partially disassembled and reassembled, at the time of installation, without the need of an additional refrigerant charge or control adjustments. The condensing unit shall be able to be removed from the condensing unit compartment for ease in moving the cabinet base section.

7.3.5 *Modular Refrigerant Couplings*—The refrigeration lines shall be connected by using self-sealing refrigerant couplings. The couplings are to be specifically designed for refrigeration applications and shall be used in sets (liquid and suction lines). There shall be a minimum of two sets in a system. Larger systems may require additional sets. The refrigerant couplings are to be a type, which would allow for future system opening at the coupling without its failure.

7.3.6 *Modular Installation*—Modular units shall be capable of being assembled and installed in the location where they are to be used. A minimum of 3 in. (76 mm) of space, in excess of the finished height and width, is required to accommodate the unit. The total installation of the unit is to be accomplished from the front of the unit without access to the exterior sides, back, or top.

8. Performance Requirements

8.1 *Operation*—Refrigerators, freezers, combination refrigerator/freezers or thaw cabinets shall conform to ANSI/UL Standard 471 and NSF/ANSI No. 7.

9. Workmanship, Finish, and Appearance

9.1 *Workmanship*—All components and assemblies of the units shall be free from dirt and other extraneous materials, burrs, slivers, tool and grind marks, dents and cracks. Castings, molded parts, and stampings shall be free of voids, sand pits, blowholes, and sprues. External surfaces shall be free from kinks, dents, and other deformities. Forming and welding shall not cause damage to the metal and shall be done neatly and accurately. All aspects of the equipment fabrication, assembly, and construction shall be such as not to cause physical harm to the operator while being able to maintain the designed working temperature.

9.2 *Finish*—The final product must be free from any sharp edges or concealed objects, which may impart injury. No components which may fall off during normal use will be considered an acceptable part of the design.

10. Sampling

10.1 A representative production model may be selected for performance testing at the request of the purchaser.

11. Test Methods

11.1 *Compliance and Operational*—Equipment shall be designed, constructed, and tested to be in compliance with ANSI/UL Standard 471 and NSF/ANSI No. 7.

12. Inspection

12.1 *Component and Material Inspection*—Incoming components and materials shall be inspected by the manufacturer to the design parameters as specified on drawings or purchase documents, or both, as agreed upon between the purchaser and supplier.

13. Rejection and Rehearing

13.1 Material that fails to conform to the requirements of this specification may be rejected. Rejection should be reported to the producer or supplier promptly and in writing. In case of dissatisfaction with the results of the test, the producer or supplier may make claim for a rehearing.

14. Certification

14.1 *General*—When specified in the purchase order or contract, the purchaser shall be furnished certification that the samples representing each lot have been either tested or inspected as directed in this specification and the requirements have been met.

14.2 *Sanitation*—Acceptable evidence of meeting the requirements of NSF/ANSI Standards shall be one of the following:

14.2.1 A current NSF listing and display of the NSF mark on the unit.

14.2.2 A certification for the unit issued by NSF under their one-time contract evaluation/certification service.

14.2.3 A certified test report from a nationally recognized laboratory acceptable to the purchaser, indicating that the unit has been tested and conforms to NSF/ANSI No. 7.

14.3 *Safety*—Acceptable evidence of meeting the requirements of ANSI/UL Standard 471 shall be one of the following:

14.3.1 A current UL listing and display of the UL seal on the unit.

14.3.2 A certified test report from a nationally recognized laboratory acceptable to the purchaser indicating that the unit has been tested and conforms to ANSI/UL Standard 471.

15. Product Marking

15.1 Each refrigerator, freezer, combination refrigerator/freezer, or thaw cabinet shall be provided with an identification plate securely affixed to the item. The plate shall be molded, die-stamped, etched on metal, indelibly stamped on labels secured by pressure-sensitive adhesive or other means as specified in the purchase document. If pressure-sensitive labels are used, the requirements of ANSI/UL 969 or equivalent must be met. The marking shall be durable and shall be legible and readily visible after the item is installed in the intended manner.

15.2 The identification plate shall include the name, brand, or trademark of the manufacturer of such known character to be readily traceable to the manufacturer and shall state the electrical characteristics (voltage, amperage, and frequency) of the equipment. The plate shall also bear a distinctive number, letter or number, and letter code that will identify an individual item or production lot of a limited group of items. In addition, such information required by ANSI/UL and NSF/ANSI as applicable shall appear on the identification plate. The plate shall be located on an external surface.

16. Manuals

16.1 Format and content of applicable manuals shall be as indicated in Specification F760 and supplemental data if required.

17. Packaging and Package Marking

17.1 Unless otherwise specified (see 5.1.10), the complete machine shall be packaged and marked in accordance with Practice D3951. In addition, the package shall be marked showing the model number, serial number, and manufacturer's name.

18. Keywords

18.1 combination refrigerator/freezer; food service equipment; freezer; refrigerator; thaw cabinet

SUPPLEMENTARY REQUIREMENTS

FEDERAL AND MILITARY PROCUREMENT

The supplemental requirements which follow apply to all Federal and Military procurements. Where provisions of this supplement conflict with the main body of the specification, this supplement shall prevail.

S1. Manual

S1.1 A manual complying with Specification F760 and its supplement shall be provided.

S2. First Article Inspection

S2.1 When required, the first article inspection shall be performed on one unit. The first article may be either a first production item or a standard production item from the supplier's current inventory, provided the item meets the requirements of the standard and is representative of the design, construction, and manufacturing technique applicable to the remaining items to be furnished under the contract.

S3. Label Plates

S3.1 Refrigerators, freezers, combination refrigerator/freezers, and thaw cabinets shall be provided with data-name plates and instruction plates.

S3.2 *Data-name Plates*—In addition to the manufacturer data plate, machines shall be provided with data-name plates readily visible to the operator during normal operating use and so as to not adversely affect the life and utility of the unit. Plates shall be attached to the front of the unit in such a manner as to meet the applicable National Sanitation Foundation sanitary requirements for this equipment. The plate shall contain the following information, which shall be stamped, engraved, or applied by photosensitive means:

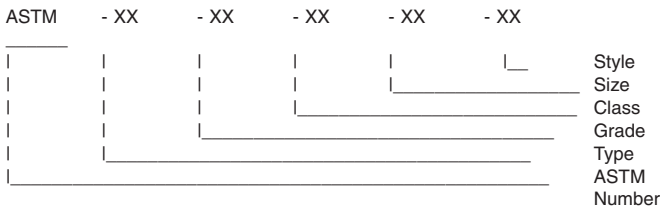
S3.2.1 National Stock Number, and

S3.2.2 Government Approved Manual Number.

S3.3 *Instruction Plate*—An instruction plate shall be made of an ANSI/UL accepted label material and shall be attached to the front of the machine. The instruction plate shall bear instructions for start-up, operation, and shutdown.

S4. Part Identifying Number

S4.1 The following part identifying numbering procedure is for government purposes and does not constitute a requirement for the contractor. The PINs to be used for items acquired to this document are created as follows:



S4.1.1 The above is an example of the PIN for an item in accordance with ASTM Standard F_____, type XX, grade XX, class XX, size XX, style XX.

S5. Human Factors Criteria

S5.1 Human factors engineering criteria, principles, and practices, as defined in Practice F1166, shall be used in the design of all refrigerators, freezers, combination refrigerator/freezers, and thaw cabinets.

S6. Preservation, Packaging and Package Marking

S6.1 When other than commercial practice or conformance to Practice D3951 is desired, the preservation, packaging, and package marking requirements shall be stated in the purchase order or contract.

S7. Manufacturer's Certification

S7.1 If the manufacturer has successfully furnished the same equipment on a previous contract within the past three years, further inspection will not be required. The manufacturer shall certify in writing that the equipment to be furnished is the same as that previously furnished and approved, and that no major design changes have been made to the equipment.

S8. Naval Shipboard Requirements

S8.1 The following additional requirements apply when equipment is to be used for shipboard purposes.

S8.2 *Power Compatibility*— Unless otherwise specified (see 5.1), refrigerators, freezers, combination refrigerator/freezers and thaw cabinets shall be compatible with 115 Vac, 60 Hz, single phase, alternating current for shipboard as specified in MIL-STD-1399/300.

S8.3 *Condenser*—Shipboard refrigerators, freezers, combination refrigerator/freezers and thaw cabinets shall have an air-cooled condenser constructed of either copper, aluminum, or steel.

S8.4 *Access*—Refrigerators, freezers, combination refrigerator/freezers, and thaw cabinets shall pass through a 26-in. (660-mm) wide by 66-in. (1676-mm) shipboard hatch without major disassembly. Machines for submarines shall pass through a 25-in. (635-mm) diameter circular hatch without major disassembly whenever possible. Modular units shall be used in applications where the intent is to circumvent cutting access openings or enlarging passageways to accommodate standard unitary units. Access must be provided from the front of the unit for replacement of components or parts and to accomplish any maintenance related work.

S8.5 *Mounting*—The refrigerators, freezers, combination refrigerator/freezers and thaw cabinets shall be provided with four removable legs suitable for bolting to the deck. Legs shall be a minimum 6-in. (152-mm) long fabricated from 14 gage minimum, 300 series stainless steel.

S8.6 *Inclined Operation*—Refrigerators, freezers, combination refrigerator/freezers and thaw cabinets shall operate satisfactorily on surface ships when inclined at an angle of 15° each side of the vertical in each of two vertical planes at right angles to each other, with no abnormal variations in temperature or performance for which the unit is designed. For submarines the angle of inclination shall be 30°.

S8.7 *Environmental Suitability*—Refrigerators, freezers, combination refrigerator/freezers, and thaw cabinets shall be capable of withstanding the ship's vibration and motion. Controls, switches, moving parts, and electrical circuits shall operate under shipboard conditions without malfunction, binding, excessive looseness, or damage (see S8.8.3).

S8.8 *Quality Assurance Provisions:*

S8.8.1 *EMI Control Tests*—When specified, refrigerators, freezers, combination refrigerator/freezers, and thaw cabinets shall be tested by the contractor in accordance with test methods of MIL-STD-461 for surface ships and submarines. The first article or the initial production unit, as applicable, shall be tested. The contractor shall furnish written certification that the equipment meets the requirements of MIL-STD-461. Non-conformance with the requirements specified shall constitute failure of the test.

S8.8.2 *Inclined Operational Test*—The refrigerator, freezer, combination refrigerator/freezer and thaw cabinet, shall be bolted to a test platform similar to shipboard installation and inclined at an angle of 15° (30° for submarines). The machine shall be operated for 1 h at each side of the vertical, in each of two vertical planes at right angles to each other. Any nonconformance with specified requirements of S8.5 shall constitute failure of this test.

S8.8.3 *Shipboard Environmental Test*—When specified, the refrigerator, freezer, combination refrigerator/freezer and thaw cabinet, under normal operating conditions, shall be tested in accordance with MIL-STD-167/1, Type I equipment. The machine shall be secured to the test machine in the same manner that it will be secured on shipboard. Failure of the machine to perform its function during or after testing, or meeting the requirements of S8.6, shall constitute failure of this test. The government reserves the right to witness all tests of machines procured for Naval shipboard use, whether performed by the supplier or an independent testing agency.

APPENDIX

(Nonmandatory Information)

X1. ADDED FEATURES

X1.1 Some manufacturers offer additional sizes and features that extend the versatility of the refrigerator, freezer, combination refrigerator/freezer or thaw cabinet. The variety of sizes and options vary from manufacturer. A good source of general information can be found in the literature available from food service equipment manufacturers and dealers.

X1.2 Typically, these options are added to the basic models at an additional cost. Any additional options that are required can be written into the procurement contract as desired.