

MIL-P-14514G
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 SUPERSEDING
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MILITARY SPECIFICATION

PUMPS, CENTRIFUGAL, SELF-PRIMING,
 FRAME MOUNTED, 1-1/2-INCH, 65-GPM AT
 50 FEET TOTAL HEAD (FOR WATER)

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

1. SCOPE

1.1 Scope. This specification covers frame-mounted, electric-motor-driven and diesel-engine-driven, self priming, 1-1/2-inch, centrifugal pumps having a capacity of 65 gallons per minute (gpm) at 50 feet total head.

1.2 Classification. Pumps shall be of the following types, as specified (see 6.2):

Type I - Electric-motor-driven.
 Type II - Diesel-engine-driven.

	<u>M</u>	<u>14514</u>	-	<u>II</u>
Prefix _____				
Military specification number _____				
Dash number indicating type _____				

Example: M14514-II - A type II, diesel-engine-driven pump conforming to MIL-P-14514.

Beneficial comments (recommendations, additions, deletions) and any pertinent data which may be of use in improving this document should be addressed to: USA Belvoir Research, Development and Engineering Center, ATTN: STRBE-TSE, Fort Belvoir, VA 22060-5606 by using the self-addressed Standardization Document Improvement Proposal (DD Form 1426) appearing at the end of this document or by letter.

AMSC N/A

FSC 4320

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1. APPLICABLE DOCUMENTS

2.1 Government documents.

2.1.1 Specifications, standards, and handbooks. The following specifications, standards, and handbooks form a part of this specification to the extent specified herein. Unless otherwise specified, the issues of these documents shall be those listed in the issue of the Department of Defense Index of Specifications and Standards (DoDISS) and supplement thereto, cited in the solicitation.

SPECIFICATIONS

FEDERAL

VV-F-800	-- Fuel Oil, Diesel.
PPP-B-640	- Boxes, Fiberboard, Corrugated, Triple-Wall.

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MIL-P-514	- Plates, Identification, Instruction and Marking, Blank.
MIL-T-704	- Treatment and Painting of Materiel.
MIL-F-3541	- Fittings, Lubrication.
MXL-G-3859	- Grease Guns, Hand-Operated, Lever, Push and Screw Type.
MIL-T-5624	- Turbine Fuel, Aviation, Grades JP-4 and JP-5.
MIL-P-10603	- Pumps and Pumping Units, Centrifugal, Power Driven , for Water, Packaging of.
MIL-I-45208	- Inspection System Requirements.
MIL-C-46168	- Coating, Aliphatic Polyurethane, Chemical Agent Resistant.
MIL-T-83133	- Turbine Fuel, Aviation, Kerosene Type, Grade JP-8 .

STANDARDS

FEDERAL

FED-STD-H28	- Screw-Thread Standards for Federal Services.
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MILITARY

MIL-STD-105	- Sampling Procedures and Tables for Inspection by Attributes.
MIL-STD-129	- Marking for Shipment and Storage.
MIL-STD-L30	- Identification Marking of US Military Property.
MIL-STD-461	- Electromagnetic Emission and Susceptibility Requirements for the Control of Electro-magnetic interference.

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- MIL-STD-810 - Environmental Test Methods.
- MIL-STD-838 - Lubrication of Military Equipment.
- MIL-STD-889 - Dissimilar Metals.
- MIL-STD-1400 - Engines Gasoline or Diesel, Methods of Test.
- MIL-STD-1410 - Methods for Selection of Industrial Engines for End Item Application.
- MIL-STD-1472 - human Engineering Design Criteria for Military Systems, Equipment, and Facilities.
- MIL-STD-1474 - Noise Limits for Army Materiel.

HANDBOOKS

- MIL-HDBK-113 - Guide for the Selection of Lubricants, Fluids, Preservatives and Speciality Products for Use in Ground Equipment Systems.

2.1.2 Other Government documents, drawings, and publications. The following other Government documents, drawings, and publications form a part of this specification to the extent specified herein. Unless otherwise specified, the issues shall be those in effect on the date of the solicitation.

DRAWINGS

ME

- TA13200E7200 - Pump, Centrifugal, Frame Mounted, Diesel-Engine-Driven, 1-1/2 Inch.
- TA13200E7210 - Pump, Centrifugal, Frame Mounted, Electric-Motor-Driven, 1-1/2 Inch.

(copies of specifications, standards, handbooks, drawings, publications, and other Government documents required by contractors in connection with specific acquisition functions should be obtained from the contracting activity or as directed by the contracting officer.)

2.2 Other publications. The following document(s) form a part of this specification to the extent specified herein. Unless otherwise specified, the issues of the documents which are DOD adopted shall be those listed in the issue of the DoDISS specified in the solicitation. Unless otherwise specified, the issues of documents not listed in the DoDISS shall be the issue of the non-Government documents which is current on the date of the solicitation.

AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)

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.)

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AMERICAN SOCIETY OF MECHANICAL ENGINEERS (ASME)

ASME Boiler and Pressure Vessel Code, Section IX, Welding and Brazing Qualification.

(Application for copies-should be addressed to the American Society of Mechanical Engineers, 345 East 47th Street, New York, NY 1001.7).

AMERICAN WELDING SOCIETY (AWS)

D1.1 - Structural Welding Code - Steel.

(Application for copies should be addressed to American Welding Society, 550 NW Lejeune Rd, P.O. Box 351040, Miami, FL 33126).

HYDRAULIC INSTITUTE (HI)

Rating Standards and Test Code Standards.

(Application for copies should be addressed to the Hydraulic Institute, 1230 Keith Building, Cleveland, OH 44115.)

SOCIETY OF AUTOMOTIVE ENGINEERS (SAE)

SAE J 429 - Mechanical and Material Requirements for Externally Threaded Fasteners.

(Application for copies should be addressed to the Society of Automotive Engineers, 400 Commonwealth Drive, Warrendale, PA 15096.)

(Non-Government standards and other publications are normally available from the organizations which prepare or which distribute the documents. These documents also may be available in or through libraries or other informational services.)

2..3 Order of precedence. In the event of a conflict between the text of this specification and the references cited herein, (except for associated detail specifications, specifications sheets or MS standards), the text of this specification shall take precedence. Nothing in this specification, however, shall supersede applicable laws and regulations unless a specific exemption has been obtained.

3. REQUIREMENTS

3.1 Description. The pumps shall be in accordance with the applicable Top Assembly TA13200E7200 (type 11) or TA13200E7210 (type I) and as specified herein.

3.1.1 Drawings. The drawings forming a part of this specification are end product drawings. No deviation from the prescribed dimensions or tolerances is permissible without prior approval of the contracting officer. Where tolerances could cumulatively result in incorrect fits, the contractor shall provide

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tolerances within those prescribed on the drawings to insure correct fit, assembly, and operation of the pumps. Any data (e.g., shop drawings, layouts, flow sheets, processing procedures, etc.) prepared by the contractor or obtained from a vendor to support fabrication and manufacture of the production item shall be made available, upon request, for inspection by the contracting officer or his designated representative.

3.2 First article. Unless otherwise specified (see 6.2), a sample shall be subjected to first article inspection (see 4.3 and 6.3). Any changes or deviations of pumps from the approved first article during production will be subject to the approval of the contracting officer. Approval of the first article will not relieve the contractor of his obligation to furnish pumps conforming to this specification.

3.3 Material. Material shall be as specified herein and on the applicable drawings. Materials not specified shall be selected by the contractor and shall be subject to all provisions of this specification.

3.3.1 Material deterioration prevention and control. The pump shall be fabricated from compatible materials, inherently corrosion resistant or treated to provide protection against the various forms of corrosion and deterioration that may be encountered in any of the applicable operating and storage environments to which the pump may be exposed.

3.3.2 Dissimilar metals. Dissimilar metals shall not be used in intimate contact with each other unless protected against galvanic corrosion. Dissimilar metals and methods of protection are defined and detailed in MIL-STD-889.

3.3.3 Identification of materials and finishes. The contractor shall identify the specific material, material finish or treatment for use with component and subcomponent, and shall make information available upon request to the contracting officer or designated representative.

3.3.4 Recovered materials. For the purpose of this requirement, recovered materials are those materials which have been collected from solid waste and reprocessed to become a source of raw materials, as distinguished from virgin raw materials. The components, pieces and parts incorporated in the pump may be newly fabricated from recovered materials to the maximum extent practicable, provided the pump produced meets all other requirements of this specification. Used, rebuilt or remanufactured components, pieces and parts shall not be incorporated in the pump.

3.4 Threads. Screw threads shall conform to FED-STD-H28.

3.5 Environmental conditions.

3.5.1 Operating temperature. The pumps shall perform as specified herein in any ambient temperature from +32 °F (0 °C) to +125 °F (52 °C), when tested in accordance with 4.5.2.4 and 4.5.2.5.

3.5.2 Storage temperature. The pumps shall not be damaged by storage in any ambient temperature from +160 °F (71 °C) to -50 °F (-46 °C).

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3.6 Safety. All shafts or rotating or moving parts of the pumps shall be guarded when such parts are exposed to contact by personnel or otherwise create a hazard. Electrical equipment shall be effectively guarded and grounded to protect all persons and objects from electrical shock hazard. When applicable, all hot surfaces of the equipment, including exhaust pipes exposed to contact by personnel or which create a fire hazard shall be fully guarded or insulated. Fuel tanks shall be located in a manner which will not allow spills or overflows to run onto the engine, exhaust, or electrical equipment. Exhaust or discharges from the equipment shall be directed away from operating personnel.

3.7 Human factors engineering. The pumps shall conform to accepted human factors engineering design criteria as described in MIL-STD-1472. Special design emphasis shall be given, but not limited to, general requirements (4), control/display integration (5.1), visual displays (5.2), controls (5.4), labeling (5.5), anthropometry (5.6), design for maintainability (5.9), and hazards and safety (5.13) of MIL-STD-1472 as applicable. The pumps shall be operable and maintainable by 5th through 95th percentile soldiers appropriately clothed for the environments of interest.

3.7.1 Noise limits. The noise produced by the pump shall conform with MIL-STD-1474 requirements, with the exception of MIL-STD-1474 5.2, 5.3, and 5.4, when tested in accordance with 4.5.2.7. The provision of MIL-STD-1474, 4.3 and 4.4, shall be provided if and only if MIL-STD-1474, 5.1.1.2 procedures have been pursued and documented to the satisfaction of the procuring activity and written permission to exceed the 85 dB(A) limit is obtained from the procuring activity. Hazard signs shall conform with MIL-STD-1474, 4.3, except the sign shall state "HEARING PROTECTION REQUIRED WITHIN (specify feet) FEET". The sign shall be readable at the distance indicated on the sign.

3.8 Reliability.

3.8.1 Type 1, electric-motor-driven. The specified mean-time-between-failure (MTBF) shall be 320 hours when the pump is tested as specified in 4.5.2.8.

3.8.2 Type IX, diesel-engine-driven. The specified MTBF shall be 140 hours when the pump is tested as specified in 4.5.2.8.

3.9 Maintenance ratio. The pumps shall have a maintenance ratio of not more than 0.05 for the type I and 0.10 for the type II. Maintenance ratio is defined as the ratio of the total active maintenance man-hours required (scheduled and unscheduled) to the total operating time. Man-hours for repair of replaced components and scheduled before-and-after operation checks are excluded. A maintenance schedule shall be prepared prior to the start of any testing.

3.10 Performance. When operating at conditions equivalent to standard sea level atmospheric conditions of 29.92 inches of mercury and water with a specific weight of 62.3 pounds per cubic foot at a temperature of 60 °F (20 °C), using a 10-foot static suction lift and 15 feet of suction line with one 90-degree elbow, the pump shall perform as follows:

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- a. Prime in not more than 2 minutes, at maximum engine or motor speed, as applicable.
- b. Deliver not less than 65 gpm at a total head of 50 feet, when operating at a maximum speed of 3600 revolutions per minute (rpm).
- c. Deliver not less than 50 gpm at a total head of 70 feet, when operating at a maximum speed of 3600 rpm.

The suction and discharge hoses and fittings shall be the same nominal size as the suction and discharge ports of the pump.

3.11 Hydrostatic pressure. The pump with suction flange assembly installed shall not leak or show permanent deformation when subjected to an internal hydrostatic pressure of not less than 80 pounds per square inch (psi).

3.12 Fuel tank. The fuel tank for the type II pump shall not leak when subjected to an internal pressure of 5 psi (see 4.5.3.1.2).

3.13 Electromagnetic interference. The electromagnetic interference emission characteristics of the pumps shall conform to MIL-STD-461.

3.14 Engine (type II). The engine shall be an industrial, 2 or 4 stroke cycle, air-cooled, diesel engine selected in accordance with MIL-STD-1410, class II. The engine shall deliver power at its continuous duty rating to meet the pump requirements specified in 3.10. The engine shall be equipped with but not limited to the following:

- a. Hand crank starting system.
- b. Dry type air cleaner.
- c. Spark arresting muffler.
- d. Ability to operate at rated capacity using fuel in accordance with W-F-800 (grades DFA, DF-1, DF-2), KIL-T-5624 (grade JP-5), and MIL-T-83133 (grade JP-8).

3.15 Lubrication.

3.15.1 Lubricants. The procedure for selection of lubricants shall be in accordance with KIL-STD-838, section 5. Lubricants selected shall be in accordance with MXL-EDBK-113, chapter 2. When the specification of the lubricant selected includes a requirement for a Qualified Products List (QPL), the lubricant supplied shall be from a source that is listed on the applicable QPL.

3.15.2 Lubrication fittings. Lubrication fittings shall conform to MIL-F-3541, type X, II, or III, zinc coated. Fittings shall be located in a protected position and shall be accessible to a hand-operated grease gun conforming to MIL-G-3859 with a 10-inch flexible extension. Accessibility to fittings shall be provided without the removal or adjustment of accessories or parts. Panels and plates equipped with hand-operable quick-disconnect fasteners may be removed to provide accessibility.

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3.15.3 Pressure-release device. A pressure-release device shall be provided where the use of pressure lubricating equipment could damage grease seals or other parts.

3.16 Identification marking. The pumps shall be identified in accordance With MIL-STD-130. The marking shall be applied to the pumps on plates conforming to MIL-P-514, type X, style 1, composition C of type I, grade A, class 1 material. Each plate shall be attached by screws, bolts, or rivets in a location where the plate will be both visible and legible.

3.17 Treatment and painting. The portions of the pumps normally painted, Internally and externally shall be cleaned, treated, and painted in accordance with MIL-T-704, type F or G, as applicable. Unless otherwise specified (see 6.2), the color shall be camouflage green 383, conforming to MIL-C-46168.

3.18 Workmanship. The pumps shall be free from defects such as misaligned components , incomplete welds, cracks, and any other defects that could impair the operating and serviceability characteristics of the pumps. All piping, fittings, hoses, and cables shall be supported to prevent damage caused by vibration, chafing, or sharp bends.

3.18.1 Castings and forgings. All parts, components , and assemblies of the pumps, which include castings and forgings, shall be clean of harmful extraneous material such as sand, dirt, sprues, scale, and flux. Rework shall be limited to procedures which do not reduce mechanical properties or effect function.

3.18.2 Metal fabrication. Metal used in fabrication shall be free from kinks and sharp bends. The straightening of material shall be done by methods that will not cause injury to the material. Corners shall be square and true. Flame-cutting, using tips suitable for the thickness of the steel, may be employed instead of shearing and sawing. All bends shall be made with controlled means to insure uniformity of size and shape. Precaution shall be taken to avoid over-heating. Heated steel shall be allowed to cool slowly. External surfaces shall be free of burrs, sharp edges, and corners, except when sharp edges or corners are required or where they are not detrimental to safety.

3.18.3 Welding. The surfaces of parts to be welded shall be free from rust, scale, paint, grease, or other foreign matter. Weldments, including weld beads, shall be of homogeneous appearance and form without spattering or other irregularities, complying with the size, configuration and other dimensional requirements to develop the full strength of the parts joined by the welds. No cracks of any type are permitted. All welding is to be produced by either AWS or ASME code qualified welders. Welds shall transmit stress without permanent deformation or failure when the parts connected by the weld are subjected to proof and service loadings. Welds shall be in accordance with AWS D1.1.

3.18.4 Welders. Before assigning any welder or welding operator to welding work , the contractor shall make available to the contracting officer certification that the welder or welding operator has passed qualification tests as prescribed for the type of welding to be performed and that such qualifications is effective as defined by the particular code of:

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AWS D1.1 Structural Welding Code - Steel
 ASME Boiler and Pressure Vessel Code, Section, IX, Welding, and Brazing
 Qualifications.

The Government reserves the right to require recertification of any welder or welding operator to produce acceptable welds.

3.18.5 Bolted connections. Boltholes shall be accurately formed and shall have the burrs removed. Washers or lockwashers shall be provided where necessary. Matching thread areas securing bolts conforming to SAE J429 or capscrews shall be of sufficient strength to withstand the tensile strength of the bolt. All fasteners shall be correctly torqued and shall have full thread engagement. Bolts shall protrude not more than 2 full threads.

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 specification where such inspections are deemed necessary to assure supplies and services conform to prescribed requirements.

4.1.1 Responsibility for compliance. All items must meet all requirements of sections 3 and 5. The inspection set forth in this specification shall become a part of the contractor's overall inspection system or quality program. The absence of any inspection requirements in the specification shall not relieve the contractor of the responsibility of assuring that all products or supplies submitted to the Government for acceptance comply with all requirements of the contract. Sampling in quality conformance does not authorize submission of known defective material, either indicated or actual, nor does it commit the Government to acceptance of defective material.

4.1.2 Component and material inspection. The contractor is responsible for insuring that components and materials used are manufactured, examined, and tested in accordance with referenced specifications and standards, as applicable.

4.1.3 Disassembly inspection. Failure of any examination or test by the first article model shall be cause for disassembly, in the presence of a Government representative, of the first article model to the extent necessary to determine the cause of failure. Each disassembled part shall be examined in detail for compliance with this specification and referenced drawings in regard to materials, dimensions, tolerances, and workmanship. Parts not complying with such requirements shall be rejected and shall be cause for rejection of the first article model. Reassembly with replacement parts and retesting shall be the responsibility of the contractor. Government furnished property shall be excluded from the requirements of this paragraph.

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4.2 Classification of inspection. The inspection requirements specified herein are classified as follows:

- a. First article inspection (see 4.3).
- b. Quality conformance inspection (see 4.4).
- c. Inspection comparison (see 4.6).
- d. Inspection of packaging (see 4.7).

4.3 First article inspection.

4.3.1 Examination. the first article pump shall be examined for defects as specified (see 4.5.1). Presence of one or more defects shall be cause for rejection or for performing the disassembly inspection specified in 4.1.3.

4.3.2 Tests. The first article pump shall be tested as specified in 4.5.2. Failure of any tests shall be cause for rejection and for performing the disassembly inspection specified in 4.1.3.

4.4 Quality conformance inspection.

4.4.1 Sampling.

4.4.1.1 Examination. Sampling for examination shall be in accordance with MIL-STD-105, inspection level II.

4.4.1.2 Tests. Sampling for tests shall be in accordance with MIL-STD-105, inspection level S-2.

4.4.2 Examination. Samples selected in accordance with 4.4.1 shall be examined for the defects specified in 4.5.1. AQL shall be 1.0 percent defective.

4.4.3 Tests.

4.4.3.1 individual.

4.4.3.1.1 Pump. Each pump shall be tested as specified in 4.5.2.1 and 4.5.2.2. Failure of this test shall be cause for rejection.

4.4.3.1.2 Fuel tank. The fuel tank of each type 11 pump shall be tested as specified in 4.5.2.3. Failure of the test shall be cause for rejection.

4.4.3.2 Samples. Samples selected in accordance with 4.4.1 shall be tested as specified in 4.5.2.10. AQL shall be 1.0 percent defective.

4.5 Inspection procedure.

4.5.1 Examination. The pump shall be examined as specified herein for the following defects:

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Major

101. Any part (or component) not in accordance with the QAP requirements as shown on the drawings.
102. Material not as specified (see 3.3).
103. Materials are not resistant to corrosion and deterioration or treated to be made resistant to corrosion and deterioration for the applicable storage and operating environment (see 3.3.1).
104. Dissimilar metals as defined in MIL-STD-889 are not effectively insulated from each other (see 3.3.2).
105. Contractor does not have documentation available for identification of material, material finishes or treatments (see 3.3.3).
106. Used, rebuilt or remanufactured components, pieces, or parts incorporated in the pump (see 3.3.4).
107. Screw-threads not as specified (see 3.4).
108. Suction and discharge hoses and fittings not as specified (see 3.10).
109. Human Factors Engineering not as specified (see 3.7).
110. Engine not as specified (see 3.14).
111. Lubricants not as specified (see 3.15.1).
112. Lubrication fittings not as specified (see 3.15.2).
113. Pressure-release device not as specified (see 3.15.3).
114. Any dimension, other than those identified on the QAP requirement shown on the drawings, not as specified.
115. Identification marking missing, incorrect, or illegible
116. Treatment and painting not as specified (see 3.17).
117. Color not as specified (see 3.17).
118. Workmanship not as specified (see 3.18).
119. Castings or forgings not as specified (3.18.1).
120. Metal fabrication not as specified (see 3.18.2).
121. Melding not as specified (see 3.18.3).
122. Welders or welding operators not certified as specified (see 3.18.4).
123. Bolted connections not as specified (see 3.18.5).

4.5.2 Tests.

4.5.2.1 Test conditions. Prior to test, the pumps shall be lubricated with grease and oil as specified in 3.15.1. Tests shall be performed in accordance with the applicable provisions of the test code for centrifugal pumps of the standards of the Hydraulic Institute. Water shall be used as the test liquid, and all test data shall be corrected to standard sea level atmospheric conditions of 29.92 inches of mercury and to the specific weight of water (62.3 pounds per cubic foot) at a temperature of 68 °F (20 °C).

4.5.2.2 Hydrostatic pressure. With suction flange assembly installed as shown on the drawings, subject the pump to an internal hydrostatic pressure of not less than 80 psi for a period of not less than 1 minute. Nonconformance to 3.11 shall constitute failure of this test.

4.5.2.3 Fuel tank. Subject the fuel tank for the type II pump to an internal pneumatic pressure of not less than 5 pounds per square inch gage (PSIG) with

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filler cap removed and replaced with test plug or test fitting and immerse in water so that the top of the tank is not less than 12 inches below the water level. Evidence of leakage of the tank shall constitute failure of the test.

4.5.2.4 High temperature. The pumps shall be tested as specified in MIL-STD-810, procedure II, method 501. The maximum ambient storage temperature shall be 160 °F (71 °C) and the maximum ambient operating temperature shall be 125 °F (52 °C). The operating period of procedure II shall be 3 hours. The pumps shall be operated at a rated capacity. Nonconformance to 3.5 shall constitute failure of this test.

4.5.2.5 Low temperature. The pumps shall be tested as specified in MIL-STD-810, procedure I, method 502. The minimum ambient storage temperature shall be -50 °F (-46 °C). The minimum ambient operating temperature shall be +32 °F (0 °C). The operating period of procedure I shall be 3 hours. The pumps shall be operated at a rated capacity. Nonconformance to 3.5 shall constitute failure of this test.

4.5.2.6 Safety. The pumps shall be evaluated for safety requirements throughout testing as specified in 4.5.2. Nonconformance to 3.6 shall constitute failure of this test.

4.5.2.7 Noise level test. Noise levels shall be measured in accordance with MIL-STD-1474, 5.1 requirements and reported in the format indicated by MIL-STD-1474, figure 7. As a minimum: noise levels shall be measured when equipment is operating under full load, in accordance with MIL-STD-1474, 5.1.2. 1.4. Contours shall be taken at not fewer than 12 equal (horizontal) arc increments, one increment shall include data from the noisiest position. Additionally, the noise level at the operator's typical operating position shall be provided as dB(A) level. Failure to comply with MIL-STD-1474 provisions shall constitute failure of this test.

4.5.2.8 Reliability. Using the applicable MTBF specified in 3.8 the pump shall be tested as specified in 4.5.2.10 with "accept" and "reject" criteria in accordance with figure 1. Continue testing until either an "accept" or "reject" decision is reached. A failure is defined as any malfunction which cannot be corrected within 30 minutes (all waiting periods are excluded) by adjustment, repair, or replacement action using controls and on-equipment tools or parts available to the using element, and is a malfunction which causes or may cause one or more of the following:

- a. Failure to commence operation, cessation of operation, or degradation of performance below specified levels.
- b. Damage to the pump by continued operation.
- c. Safety hazards to personnel.

Nonconformance to 3.8 shall constitute failure of this test.

4.5.2.9 Maintenance ratio. The maintenance ratio shall be computed during initial production testing. Nonconformance to 3.9 shall constitute failure of this test.

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4.5.2.10 Performance. Prime and operate the assembled pump at the designed operating speed and at a static suction lift equivalent to 10 feet of water at standard conditions, Test the pump for requirements specified in 3.10 in accordance with the Rating Standards and Test Code Standards for centrifugal pumps of the Hydraulic Institute. Head, capacity, and speed (rpm) of the pump shall be measured at not less than six points on the pump performance curve. The measured points shall include the rating points (see 3.10), point of maximum operating speed, wide open discharge, and shut-off. The pump shall run for not less than 5 minutes at each measured point. Nonconformance to the requirements of 3.10 shall constitute failure of this test.

4.5.2.11 Electromagnetic interference. The first article shall be tested to determine conformance to 3.13. Failure to comply with MXL-STD-461 shall constitute failure of this test.

4.5.2.12 Engine performance (type 11). Prior to installation of the engine to the pump and examination and tests of the first article, the engine shall be tested in accordance with MIL-STD-1400, test method 3000. Nonconformance to requirements of MIL-STD-1400 shall constitute failure of this test.

4.6 Inspection comparison. The Government may select pumps at any time during the contract production period and subject these pumps to the examination specified in 4.5.1 and the tests specified in 4.5.2.1 through 4.5.2.11 to determine conformance to the requirements of this specification. The inspection will be performed by the Government, at a site selected by the Government, on pumps selected at random from those which have been accepted by the Government and will not include the previously inspected first article pumps. In addition to any test specified as part of the inspection comparison, the Government reserves the right to conduct any and all other tests contained in this specification as part of the inspection comparison, and failure of such additional tests shall have the same effect as failure of those tests specified as inspection comparison.

4.6.1 Inspection failure, Failure of an inspection comparison pump to meet any requirement specified herein during and as a result of the examination and tests specified in 4.6 shall be cause for rejection of the inspection comparison pump(s) and shall be cause for refusal by the Government to continue acceptance of production pumps until evidence has been provided by the contractor that corrective action has been taken to eliminate the deficiencies. Correction of such deficiencies shall be accomplished by the contractor at no cost to the Government on pumps previously accepted and produced under the contract. Any deficiencies found as a result of the inspection comparison will be considered prima facie evidence that all pumps accepted prior to the completion of inspection comparison are similarly deficient unless evidence to the contrary is furnished by the contractor and such evidence is acceptable to the contracting officer.

4.6.2 Inspection system. The contractor shall maintain an inspection system in accordance with MIL-I-45208.

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4.7 Inspection of packaging. Packaging of pumps shall be examined and tested in accordance with the inspection requirements of MIL-P-10603. Examination shall also confirm compliance with the following additional defects:

- 124. Engines of type II pumps not preserved for commercial preservation.
- 125. Triplewall fiberboard boxes, if used for level B, not specified class or style.
- 126. Weight and cube data not marked on commercial shipping containers.
- 127. Depreservatiuon guides not prepared and included with pumps.

5. PACKAGING

5.1 Preservation.

5.1.1 Level A and B. Level A and B preservation for pumps shall be in accordance with the applicable requirements of MIL-P-10603.

5.1.2 Commercial. Pumps shall be preserved in accordance with ASTM D 3951 with the exception that type II pumps shall have the engine preserved as specified for level A.

5.2 Packing.

5.2.1 Level A and B. Pumps shall be packed individually in accordance with the level A and B packing requirements of MIL-P-10603. Additionally, for level B packing boxes conforming to PPP-B-640, class 2, style E or G may be used. Closure and reinforcement of PPP-B-640 boxes shall be in accordance with the box specification.

5.2.2 Commercial. Pumps shall be individually packed in container in accordance with ASTM D 3951.

5.3 Marking.

5.3.1 Level A and B. Marking shall be in accordance with MIL-STD-129.

5.3.2 Commercial. Marking of commercial packaging shall be in accordance with ASTM D 3951. In addition, each shipping container shall display weight and cube data.

5.4 Depreservation guide. Two depreservation guides shall be prepared. One guide shall be placed in waterproof envelope marked "Depreservation Guide" and shall be secured in a conspicuous location on the pump. The second guide shall be placed with the technical manuals and the preserved manuals shall be marked to indicate that the depreservation guide is inside. Unless otherwise specified (see 6.2), DA Form 2258, "Depreservation Guide For Vehicles and Equipment", shall be used (see 6.5).

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6. NOTES

6.1 Intended use. The pumps covered by this specification are intended for general purpose use in water purification equipment.

6.2 Ordering data.

6.2.1 Acquisition requirements. Acquisition documents should specify the following:

- a. Title, number, and date of this specification.
- b. Type of pump required (see 1.2).
- c. Date of issue of DoDISS applicable and exceptions thereto (see 2.1.1).
- d. When a first article is not required (see 3.2).
- e. Time frame required for submission of first article model and number of pumps required (see 3.2).
- f. When the Government will conduct any or all of the first article examination and tests, the contracting officer should specify which examination and tests will be conducted by the Government and which examination and tests shall be conducted by the contractor (see 3.2).
- g. Color required if other than specified (see 3.17).
- h. Degree of preservation and packing required (see 5.1 and 5.2).
- i. When other than DA Form 2258 shall be used (see 5.4).

6.3 First article. When a first article inspection is required, the item should be a preproduction model. The first article should consist of one unit. The contracting officer should include specific instructions in the acquisition documents regarding arrangements for examinations tests and approval of the first article test results and disposition of the first article.

6.4 Lubricants. MIL-STE838 Lubrication of Military Equipment, prescribes the policy for using specification-type products wherever possible and provides specific requirements for potential use of non-standard proprietary products. MIL-STD-838 is implemented by MIL-HDBK-113 Guide for the Selection of Lubricants, Fluids, Preservatives and Speciality Products for Use in Ground Equipment Systems. The contracting officer should note that unless otherwise authorized by the US Army Belvoir Research, Development and Engineering Center (ATTN: STRBE-VF), Fort Belvoir, VA 22060-5606, lubricants, fluids, and greases for ground equipment systems must be restricted to those listed under MIL-HDBK-113, chapter 2.

6.5 Depreservation guides. The contracting officer should arrange to furnish the necessary copies of M Form 2258, when requested by the contractor (see 5.4).

6.6 Subject term (key word) listing.

Pumping assembly, diesel engine driven.
Pumping assembly, electric motor driven.
Pumping assembly, water.
Pumping assembly, 65 GPM, centrifugal.

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6.7 Changes from previous issue. Asterisks (or vertical lines) are not used in this revision to identify changes with respect to the previous issue due to the extensiveness of the changes.

Custodians:

Army - ML

Air Force - 99

Preparing activity:

Army - ME

Project 4320-0306

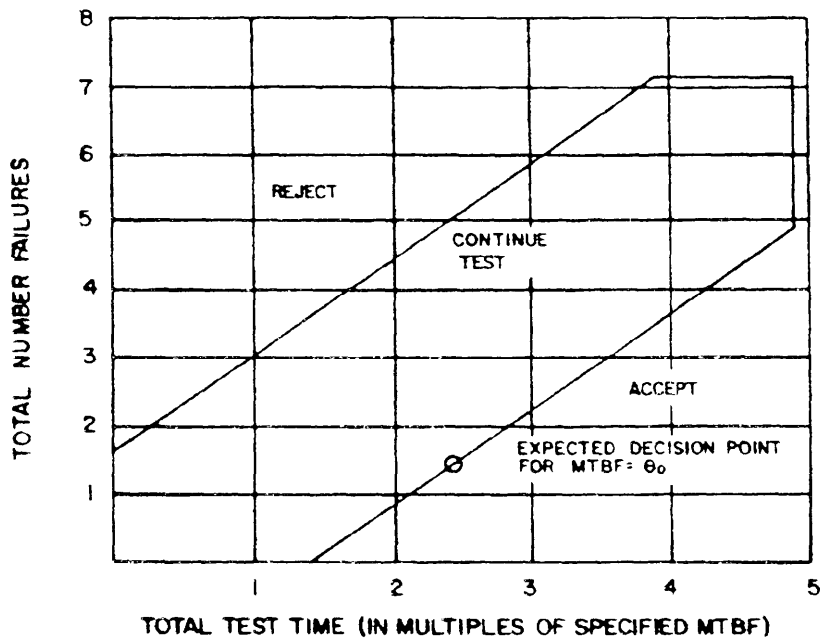
Review activities:

Air Force - 84

DLA - CS

MIL-P-14514C

DECISION RISKS 20 %
 DISCRIMINATION RATIO 2.0.1



	TOTAL TEST TIME*	
	REJECT (EQUAL OR LESS)	ACCEPT (EQUAL OR MORE)
0	N/A	1.40
1	N/A	2.09
2	.35	2.79
3	1.04	3.48
4	1.73	4.17
5	2.43	4.87
6	3.12	4.07
7	3.81	4.87
8	4.87	N/A

*TOTAL TEST TIME IS TOTAL UNIT HOURS OF "EQUIPMENT ON" TIME AND IS EXPRESSED IN MULTIPLES OF THE SPECIFIED MTBF.

FIGURE 1. Accept - reject criteria.

X-3399

INSTRUCTIONS: In a continuing effort to make our standardization documents better, the DoD provides this form for use in submitting comments and suggestions for improvements. All users of military standardization documents are invited to provide suggestions. This form may be detached, folded along the lines indicated, taped along the loose edge (*DO NOT STAPLE*), and mailed. In block 5, be as specific as possible about particular problem areas such as wording which required interpretation, was too rigid, restrictive, loose, ambiguous, or was incompatible, and give proposed wording changes which would alleviate the problems. Enter in block 6 any remarks not related to a specific paragraph of the document. If block 7 is filled out, an acknowledgement will be mailed to you within 30 days to let you know that your comments were received and are being considered.

NOTE: This form may not be used to request copies of documents, nor to request waivers, deviations, or clarification of specification requirements on current contracts. Comments submitted on this form do not constitute or imply authorization to waive any portion of the referenced document(s) or to amend contractual requirements.

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STANDARDIZATION DOCUMENT IMPROVEMENT PROPOSAL

(See Instructions - Reverse Side)

1. DOCUMENT NUMBER MIL-P-14514C		2. DOCUMENT TITLE Pumps, Centrifugal, Self-Priming, Frame Mounted, 1-1/2-Inch, 65-GPM at 50 Feet Total Head (for Water)	
3a. NAME OF SUBMITTING ORGANIZATION		4. TYPE OF ORGANIZATION (Mark one)	
3b. ADDRESS (Street, City, State, ZIP Code)		<input type="checkbox"/> VENDOR	
		<input type="checkbox"/> USER	
		<input type="checkbox"/> MANUFACTURER	
		<input type="checkbox"/> OTHER (Specify): _____	
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		7b. WORK TELEPHONE NUMBER (Include Area Code) - Optional	
8a. MAILING ADDRESS (Street, City, State, ZIP Code) - Optional		8. DATE OF SUBMISSION (YYMMDD)	

(TO DETACH THIS FORM, CUT ALONG THIS LINE.)