

INCH-POUND

MIL-P-52109F  
 9 December 1992  
 SUPERSEDING  
 MIL-P-52109E(ME)  
 11 July 1984

## MILITARY SPECIFICATION

## PUMP ASSEMBLY, CENTRIFUGAL, 2-INCH, DIESEL-ENGINE-DRIVEN (FOR WATER)

This specification is approved for use within the USA Belvoir Research, Development and Engineering Center, Department of the Army, and is available for use by all Departments and Agencies of the Department of Defense.

## 1. SCOPE

1.1 Scope. This specification covers 2-inch, 125 gallons per minute (gpm) at 50-foot head, integral, self-priming, centrifugal, water pump assembly driven by a commercial diesel engine (see 6.8).

## 2. APPLICABLE DOCUMENTS

2.1 Government documents.

2.1.1 Specifications and standards. The following specifications and handbooks form a part of this document to the extent specified herein. Unless otherwise specified, the issues of these documents are those listed in the issue of the Department of Defense Index of Specifications and Standards (DODISS) and supplement thereto, cited in the solicitation (see 6.2).

## SPECIFICATIONS

## FEDERAL

VV-F-800 - Fuel Oil, Diesel.

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: SATBE-TSE, Fort Belvoir, VA 22060-5606 by using the 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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## MILITARY

- MIL-T-704 - Treatment and Painting of Materiel.
- MIL-S-7916 - Sealing Compound, Thread and Gasket, Fuel, Oil, and Water Resistant.
- MIL-P-10603 - Pumps and Pumping Units, Centrifugal, Power-Driven, for Water, Packaging of.
- MIL-P-14105 - Paint, Heat-Resisting (for Steel Surfaces).
- MIL-F-46162 - Fuel, Diesel, Referee Grade.
- MIL-C-46168 - Coating, Aliphatic Polyurethane, Chemical Agent Resistant.
- MILL-C-53039 - Coating, Aliphatic Polyurethane, Single Component, Chemical Agent Resistant.
- MIL-T-83133 - Turbine Fuel, Aviation, Kerosene Type, JP-8.

## STANDARDS

## FEDERAL

- FED-STD-H28 - Screw Thread Standards for Federal Service.
- FED-STD-595 - Colors Used in Government Procurement.

## MILITARY

- MIL-STD-105 - Sampling Procedures and Tables for Inspection by Attributes.
- MIL-STD-810 - Environmental Test Methods.
- MIL-STD-1472 - Human Engineering Design Criteria for Military Systems, Equipment, and Facilities.
- MIL-STD-1474 - Noise Limits for Army Material.

(Unless otherwise indicated, copies of federal and military specifications, standards, and handbooks are available from the Standardization Documents Order Desk, Building 4D, 700 Robbins Avenue, Philadelphia, PA 19111-5094.)

2.1.2 Other Government documents, drawings, and Publications. The following other Government documents, drawings, and publications form a part of this document to the extent specified herein. Unless otherwise specified, the Issues are those cited in the solicitation.

## DRAWINGS

## ME

- TA13228E9847 - Pump Assembly, Centrifugal, Water, 2-Inch, Diesel-Engine-Driven, Noise Enclosed, 125 GPM.

(Copies of drawings required by contractors in connection with specific acquisition functions should be obtained from the USA Belvoir Research, Development, and Engineering Center, ATTN: SATBE-FSH, Fort Belvoir, VA 22060-5606.)

2.2 Non-Government Publications. The following document(s) form a part of this document to the extent specified herein. Unless otherwise specified, the issues

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of the documents which are DoD adopted are those listed in the issue of the DODISS cited in the solicitation. Unless otherwise specified, the issues of documents not listed in the DODISS are the issues of the documents cited in the solicitation (see 6.2).

#### 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.)

#### HYDRAULIC INSTITUTE

Standards for Centrifugal, Rotary, and Reciprocating Pumps.

(Application for copies should be addressed to the Hydraulic Institute, 14600 Detroit Avenue, 712 Lakewood Center North, Cleveland, OH 44107.)

(Non-Government standards and other publications are normally available from the organizations that prepare or 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 document and the references cited herein, the text of this document takes precedence. Nothing in this document, however, supersedes applicable laws and regulations unless a specific exemption has been obtained.

### 3. REQUIREMENTS

3.1 Description. The pump assembly shall conform to TA13228E9847 and as specified herein.

3.1.1 Drawings. The drawings forming a part of this specification are end product drawings. No deviations 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 tolerances within those prescribed on the drawings to insure correct fit, assembly, and operating of the pump. 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 designated representative.

3.2 First article. Unless otherwise specified (see 6.2), a sample shall be subjected to first article inspection (see 6.3) in accordance with 4.3.

3.3 Material. Material shall be as specified on the applicable drawings.

3.3.1 Cadmium plating. Except for grade 5B and grade 8 bolts, cadmium plated fasteners shall not be used.

3.3.2 Recovered materials. For the purpose of this requirement, recovered materials are those materials which have been collected from solid waste and

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reprocessed to become a source of raw materials, as distinguished from virgin raw materials. The components, pieces and parts incorporated in the pump assembly may be newly fabricated from recovered materials to the maximum extent practicable, provided the pump assembly produced meets all other requirements of this specification. Used, rebuilt or remanufactured components, pieces and parts shall not be incorporated in the pump assembly.

3.4 Threads. Threads shall conform to FED-STD-H28. Threads on all screw fittings shall be coated with sealing compound conforming to MIL-S-7916.

3.5 Environmental conditions.

3.5.1 High temperatures. The pump assembly shall not be damaged when stored in any ambient temperature of +160 °F. The pump assembly shall perform as specified herein in an ambient temperature of +125 °F.

3.5.2 Low temperature. The pump assembly shall not be damaged by storage in an ambient temperature of -65 °F. The pump assembly shall perform as specified in an ambient temperature of +32 °F.

3.6 Safety. All equipment hot surfaces normally above 140 °F, including exhaust pipes exposed to contact by personnel or which create a fire hazard, shall be fully guarded or insulated. Surface temperatures induced by climatic environment are exempt from this requirement. Fuel tanks shall be located in a manner which will not allow spills or overflows to run onto the engine, exhaust, or other electrical equipment. Exhaust or discharges from the equipment shall be directed so that they do not endanger personnel or obstruct the view of the operator.

3.7 Human factors. Any design changes to the pump assembly shall comply with general requirements (4), controls (5.4), labeling (5.5), design for maintainability (5.9), and hazards and safety (5.13) of MIL-STD-1472.

3.8 Reliability. The pump assembly shall have a specified Mean-Time-Between-Failure (MTBF) of 140 hours when tested in accordance with 4.5.2.6.

3.9 Maintainability.

3.9.1 Maintenance support. Assemblages or support elements such as technical manuals, repair parts, special tools, or lubrication charts, as specified (see 6.4 and 6.5), shall be adequate to perform the intended function of assisting or conducting maintenance operations when tested as specified in 4.5.2.7.

3.9.2 Maintenance ratio. The pump assembly shall have a maintenance ratio of not more than 0.06. A maintenance schedule shall be furnished prior to the start of any testing. Maintenance ratio is 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.

3.10 Performance. The pump assembly shall be capable of delivering water at the rates specified by the performance curve in figure 1 when operating under standard conditions specified in 4.5.2.1.

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3.10.1 Pump priming. The pump shall prime itself automatically after initial filling of the case and deliver not less than the rated flow of 125 gpm in not more than 5 minutes, when operating at a static suction lift equivalent of 25 feet at standard conditions as specified in 4.5.2.1.

3.10.2 Hydrostatic pressure. The pumps shall withstand an internal hydrostatic pressure of 100 pounds per square inch (psi) for 1 minute without leakage or permanent deformation (see 3.15.1).

3.11 Handling and transportation. The pump assembly shall be able to withstand the vibration and shocks encountered from normal handling and shipment without damage or reduction of operational performance. If the total weight of the pump assembly is 147 pounds or less, a label stating "FOUR PERSON CARRY" shall be stenciled on the pump assembly. If the total weight of the pump assembly exceeds 147 pounds, a label stating "MECHANICAL LIFT ONLY" shall be stenciled on the pump assembly.

3.12 Lubrication. Unless otherwise preserved for packaging (see 5.1) and unless otherwise specified (see 6.2), the engine shall be filled to the operating level with grade of oil designated for use in temperatures above 0 °C (32 °F). A tag shall be attached in a conspicuous place to indicate the grade of lubricant used.

3.13 Identification marking. The pump assembly shall be identified in accordance with the applicable drawings.

3.14 Treatment and painting. Treatment and painting of the pump assembly shall be in accordance with MIL-T-704, type F or G, and as stated herein.

- a. All external surfaces of the pump assembly (except those that reach a temperature of 400 °F), regardless of the material selected, shall have a finish coat of paint conforming to MIL-C-46168 or MIL-C-53039. All marking and caution lettering shall be flat black. Any external surface that reaches a temperature of 400 °F during operation shall be finish coated with paint conforming to MIL-P-14105. Unless otherwise specified (see 6.2), finish coat color shall be Tan 686A, color chip No. 33446 in accordance with FED-STD-595.
- b. All other surfaces of the pump assembly, to include those within the noise enclosure and those behind insulation material, shall be cleaned, treated, and painted using manufacturer's commercial practices. The engine pump and all other internal associated hardware, fasteners, and fittings may be finished with the manufacturer's standard commercial paint and color, plating, or treatment.

### 3.15 Workmanship.

3.15.1 Castings. All castings shall be free of extraneous material such as sand, dirt, pits, sprues, scale, and flux. Fins resulting from line-of-parting of sand molds shall be ground or machined flush with adjacent material. Imperfections in castings may be corrected by welding provided it will cause no degradation in strength or performance. Pumps containing castings which have been repaired by welding shall be given a hydrostatic test for 10 minutes duration and 25-foot prime test.

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3.15.2 Welding. All welding shall be as specified on the drawings.

3.15.3 Metal fabrication. Metal sheet and plate used in the fabrication of the pump assembly shall be free from kinks and sharp bends. The straightening of material shall be done by methods that will not cause cracking or permanent deformation. Sharp projections from shearing and clipping shall be removed. Corners shall be square and true. Flame cutting may be employed. All bends of a major character shall be made with metal dies or fixtures in order to insure uniformity of size and shape. All burrs and rough edges shall be removed. -

3.15.4 Bolted connections. Boltholes shall be punched or drilled and shall have the burrs removed. All bolts, nuts and screws shall be tightened to the manufacturer's specifications or locking devices be used to prevent loosening by vibration.

3.16 Engine. If an engine other than the engine shown on drawings is used, the engine for the pump assembly shall be a commercial 2- or 4-stroke cycle diesel engine. The "no-load" engine speed shall be not less than 3600 rpm and not greater than 3800 rpm. The performance curve shown on figure 1 must be met without exceeding the manufacturer's continuous duty horsepower rating while pumping water. The engine shall be capable of operation at rated capacity on fuel conforming to MIL-T-83133 (JP-8), and all fuels meeting the requirements of VV-F-800.

3.16. 1.1 Diesel engine accessories. All engine accessories shall be furnished by or approved by the engine manufacturer for this application. The diesel engine shall be furnished with but not limited to the following accessories.

- a. Throttle control assembly to permit manually adjusting and locking in place to provide any engine speed up to the engine manufacturer's maximum recommended speed. The throttle control shall be labeled to indicate starting and stopping positions with a directional arrow to indicate increased speed.
- b. Air cleaner. The air cleaner shall be dry type.
- c. Air cleaner indicator. An air cleaner indicator shall be furnished to show when the air cleaner is restricted and needs cleaning.
- d. Fuel tank. The fuel tank and its mountings shall withstand all the shocks and vibrations from handling and continuous operation. The fuel fill port shall be labeled "DIESEL FUEL ONLY" in accordance with MIL-STD-1472, 5.5 requirements.
- e. Starting system. The starting system shall be by either hand crank or recoil start. Secure storage for the hand crank shall be provided on the pump frame. A low temperature assist starting system shall be provided for cold weather starting.
- f. Fuel filter. A replaceable fuel filter shall be furnished.

3.17 Noise limits. Noise levels produced by the pumping assembly shall comply with the requirements of MIL-STD-1474, with the exception of 5.2, 5.3, and 5.4, when tested in accordance with 4.5.2.11. The noise level at the operator's position and occasionally occupied positions shall not exceed Category D of MIL-STD-1474 (see 6.5). The operator's position shall be defined to be 18 inches horizontally and 12 inches vertically from the throttle control. Occasionally occupied areas shall be defined to be anywhere within 39 inches from the perimeter

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of the pumping assembly at locations other than the operator's position. Noise hazard caution signs shall be provided in accordance with MIL-STD-1474, 4.2, when applicable (see 6.5).

3.18 Noise enclosure. The pump-engine assembly shall be contained in a permanent noise enclosure as specified by the applicable drawings and as stated herein. All components of the assembly used by the operator shall be easily accessible without removal of the enclosure and without the use of tools of any kind. Accessible components shall include the starting system, the throttle control assembly, the compression release, the fuel fill port, the pump casing drain port, the pump priming port, the suction and discharge connections, the engine oil dipstick, and the air cleaner. The throttle control assembly and the compression release shall be located on the exterior of the noise enclosure. The enclosure shall be removable to the extent necessary to perform required field maintenance and shall include external provisions for carrying the pump assembly. If noise reducing insulation is used within the enclosure it shall be non-combustible and shall not absorb fuel and oil.

3.18.1 Enclosure labeling. If the enclosure is provided with access panels or doors, the panel or door shall be labeled or stenciled to indicate the items accessed through it. All fluid fill and drain ports shall be labeled or stenciled to indicate the fluid filled or drained through them (i.e., "DIESEL FUEL ONLY", "ENGINE OIL DRAIN", "ENGINE OIL FILL", "PUMP PRIME", "PUMP DRAIN"). the outlet connection shall be labeled "OUTLET". The inlet connection shall be labeled "INLET". A label stating "CLOSE TO RUN" shall be stenciled on both sides of all access panels and doors, if possible.

3.18.2 Oil sump temperature. The oil sump temperature of the engine shall not exceed the engine manufacturer's recommended maximum operating sump temperature when the pump is operating at full load and an ambient temperature of 125 °F.

#### 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 (examinations and tests) 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 ensure supplies and services conform to prescribed requirements.

4.1.1 Responsibility for compliance. All items shall 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 ensuring that all products or supplies submitted to the Government for acceptance comply with all requirements of the contract. Sampling inspection, as part of manufacturing operations, is an acceptable practice to ascertain conformance to requirements, however, this does not authorize submission of known defective material, either indicated or actual, nor does it commit the Government to acceptance of defective material.

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4.2 Classification of inspections. 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 of packaging (see 4.6).

#### 4.3 First article inspection.

4.3.1 Examination. The first article pump assembly shall be examined as specified in 4.5.1. Presence of one or more defects shall be cause for rejection.

4.3.2 Tests. The first article pump assembly shall be tested as specified in 4.5.2.1 through 4.5.2.11. Failure of any test shall be cause for rejection.

#### 4.4 Quality conformance inspection.

4.4.1 Sampling. Sample size shall be determined by using MIL-STD-105, table I and table IIa. A lot shall be accepted when zero defects are found and rejected when one or more defects are found.

##### 4.4.2 Examination.

4.4.2.1 Samples. Samples selected in accordance with 4.4.1 shall be examined as specified in 4.5.1.

##### 4.4.3 Tests.

4.4.3.1 Sample test. Samples selected in accordance with 4.4.1 shall be tested in accordance with 4.5.2.1, 4.5.2.2, 4.5.2.8, and 4.5.2.9. Failure of any test shall be cause for rejection of that pump assembly.

4.4.3.2 Repaired casting test. Each pump which contains a repaired casting as specified in 3.15.1 shall be tested in accordance with 4.5.2.1, 4.5.2.2 (except that the test time shall be 10 minutes), and 4.5.2.8 (25 foot prime test only). Failure of any test shall be cause for rejection.

#### 4.5 Inspection Procedure.

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

- 101. Any component not in accordance with the QAP requirements as shown on the drawings (see 3.1).
- 102. Components missing or not as specified (see 3.1).
- 103. Parts or components do not function (see 3.1).
- 104. Dimensions and tolerances not as specified (see 3.1.1).
- 105. Materials not as specified (see 3.3).
- 106. Use of cadmium plating (see 3.3.1).
- 107. Used, rebuilt or remanufactured components, pieces, or parts incorporated in the pump (see 3.3.2).
- 108. Threads not as specified (see 3.4).
- 109. Safety requirements not as specified (see 3.6).
- 110. Human factors engineering not as specified (see 3.7).



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- 111. Lubrication not as specified (see 3.12).
- 112. Identification marking missing, incomplete, or illegible (see 3.13).
- 113. Treatment and painting not as specified (see 3.14).
- 114. Paint color not as specified (see 3.14).
- 115. Castings not as specified (see 3.15.1).
- 116. Welding not as specified (see 3.15.2).
- 117. Metal fabrication not as specified (see 3.15.3).
- 118. Bolted connections not as specified (see 3.15.4).
- 119. Engine not as specified (see 3.16).
- 120. Engine accessories not as specified (see 3.16.1).
- 121. Noise enclosure not as specified (see 3.18).
- 122. Noise enclosure labeling not as specified (see 3.18.1).

#### 4.5.2 Tests.

4.5.2.1 Conditions. Prior to tests, the pump assembly shall be lubricated with grease and oil as specified in 3.12. 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 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 20 °C [68 °F]). Corrections for water temperature shall be done mathematically. Correction for atmospheric pressures at the test site shall be made by physically adjusting the static suction lift. A data sheet and pump performance curve indicating pump efficiency, head capacity, and brake horsepower required by the pump shall be furnished with the first article pump assembly. All performance tests for the pump assembly shall be performed using fuel conforming to MIL-F-46162 (DF-2).

4.5.2.2 Hydrostatic pressure. With suction and discharge openings sealed, subject the pump to an internal hydrostatic pressure of not less than 100 psi for a period of not less than 1 minute. Leakage or permanent deformation of the pump or any of its components shall constitute failure of this test.

4.5.2.3 High temperature. The pump assembly shall be tested as specified in MIL-STD-810, method 501, procedures I and II. The maximum ambient storage temperature shall be 160 °F and the maximum ambient operating temperature shall be 125 °F. The storage period of procedure I shall be 24 hours. After temperature stabilization at 125 °F and using constant temperature exposure, the operating period of procedure II shall be 3 hours. The pump assembly shall be operated at rated capacity. Nonconformance to 3.5.1 or 3.18.2 shall constitute failure of this test.

4.5.2.4 Low temperature. The pump assembly shall be tested as specified in MIL-STD-810, method 502, procedures I and II. The minimum ambient storage temperature shall be -65 °F. The minimum ambient operating temperature for the pump assembly shall be 32 °F. The storage period of procedure I shall be 24 hours. After temperature stabilization at +32 °F and using constant temperature exposure, the operating period for procedure II shall be 3 hours. The pump assembly shall be operated at rated capacity. Nonconformance to 3.5.2 shall constitute failure of this test.

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

4.5.2.6 Reliability. Pump assembly selected for first article shall be operated at the rated capacity of 125 gpm under the standard conditions specified in 4.5.2.1. The pumps shall be continuously operated for 9 hours out of every 24 hours. Normal maintenance shall be conducted during scheduled down-time. Operation and maintenance shall be performed in accordance with the instructions set forth in the manufacturer's operation and maintenance schedule. A failure is defined as any malfunction which:

- a. Cannot be corrected within 30 minutes by adjustment, repair or replacement using only the maintenance tools and repair parts furnished with the equipment; or
- b. May cause failure to commence operation, cessation of operation, or degradation of performance below specified level; or
- c. May damage the item by continuing the operation; or
- c. May cause safety hazard to operating personnel.

The total test time is total unit hours of pump "on" time and is expressed in multiples of specified MTBF (-00, see 3.8). The test shall continue for a sufficient length of time to reach a decision to "accept" or "reject" in accordance with figure 2. Nonconformance to 3.8 shall constitute failure of this test.

4.5.2.7 Maintainability. During testing of the pumps as specified in 4.5.2.6, adequacy of all the maintenance support elements such as operation and maintenance schedule, lubrication charts, repair parts and the requirements for common tools as well as special tools shall be evaluated. Any inadequacy in the maintenance support elements, which would result in inability of the pumps to be maintained as specified, shall constitute failure of this test and shall require revision of the document(s). Errors or inadequacies in the manuals shall not be considered in assessing the maintenance ratio. Nonconformance to 3.9 shall constitute failure of this test.

4.5.2.8 Priming. Prime the pump under the conditions and speed specified in 3.10.1 and 3.10.2, respectively. Inability of the pump to prime and deliver the rated capacity within the time specified shall constitute failure of this test.

4.5.2.9 Head capacity. Operate the pump at the pump speed specified in 3.10.2 and at the standard conditions specified in 4.5.2.1 to determine the head-capacity performance. Failure to meet or exceed the head capacity specified in 3.10 shall constitute failure of this test.

4.5.2.10 Handling and transportability. Test the pump assembly in accordance with MIL-STD-810, method 514, equipment category 3, procedure III. Any permanent deformation, failure of welds, cracks, breaks, or failure of the pump to perform as specified herein shall constitute failure of this test.

4.5.2.11 Noise level test. Noise levels shall be measured in accordance with MIL-STD-1474 requirements and reported in the format indicated by MIL-STD-1474, figure 11. As a minimum, noise levels shall be measured when equipment is operating at full load. Noise levels shall be measured at not fewer than 12 equa

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(horizontal) arc increments for the occasionally occupied positions. Additionally, the noise level at the typical operating position (see 3.17) shall be provided as dB(A) level. Failure to comply with 3.17 provisions shall constitute failure of this test.

4.6 Inspection of packaging. The preservation, packing, and marking shall be examined and tested to determine compliance with the applicable quality assurance provisions of MIL-P-10603 except that commercial preservation, packing, and marking shall be examined for compliance with ASTM D 3951 and the requirements of section 5 herein.

## 5. PACKAGING

5.1 First article pack. Unless otherwise specified (see 6.20, the contractor shall furnish a first article pack for examination and testing within the time frame specified (see 6.2), in accordance with the preproduction pack requirements of MIL-P-10603.

5.2 Preservation, packing, and marking. Preservation, packing, and marking shall be Level A or commercial as specified (see 6.2).

5.2.1 Level A. Level A preservation, packing, and marking shall be in accordance with the applicable requirements of MIL-P-10603.

5.2.2 Commercial. Commercial preservation, packing, and marking shall be in accordance with ASTM D 3951. Additionally, each shipping container shall be marked with the cube and gross weight.

## 6. NOTES

(This section contains information of a general or explanatory nature that may be helpful, but is not mandatory. )

6.1 Intended use. The pump assembly is intended to pump water.

6.2 Acquisition requirements. Acquisition documents should specify the following:

- a. Title, number, and date of the specification.
- b. Issue of DODISS to be cited in the solicitation, and if required, the specific issue of individual documents referenced (see 2.1.1 and 2.2).
- c. when a first article is required for inspection and approval, and number of pump assemblies required (see 3.2 and 6.3).
- d. When the Government will conduct any or all of the first article examinations and tests. When the Government will conduct some but not all of the first article examinations and tests, the contracting officer should specify which examinations and tests will be conducted by the Government and which examinations and tests shall be conducted by the contractor (see 3.2).
- e. When lubrication oil other than as specified is required (see 3.12).
- f. Color required when other than as specified (see 3.14).
- g. When a first article pack is not required (see 5.1).

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- h. Time frame for submission of first article pack, when required (see 5.1).
- i. Degree of preservation, packing, and marking required (see 5.2).

6.3 First article. When a first article inspection is required, the item(s) should be a preproduction model. The first article should consist of one or more assemblies. The contracting officer should include specific instructions in acquisition documents regarding arrangements for examinations, approval of the first article test results and disposition of the first articles. Invitation for bids should provide that the Government reserves the right to waive the requirement for samples for first article inspection to those bidders offering a product which has been previously acquired or tested by the Government, and that bidders offering such products, who wish to rely on such production or test, must furnish evidence with the bid that prior Government approval is presently appropriate for the pending contract. Bidders should not submit alternate bids unless specifically requested to do so in the solicitation.

6.4 Superseding data. This specification covers one type and class of pump assembly. Classes 1 and 2 and type 11 have been deleted by this revision.

MIL-P-52109E(ME)	MIL-P-52109E(ME)
Class 1 - TA13200E8800 125 gpm at 50 foot head, gasoline engine driven	Inactive for new design, use for repair parts only
Class 2 - TA13200E8850 170 gpm at 50 foot head gasoline engine driven	Obsolete
Class 3 - TA13228E9847 125 gpm at 50 foot head, diesel engine driven	For water only
Type I - water	Retained
Type II - flammable liquid	Use purchase description prepared by the Marine Corps Logistics Center, Albany, Georgia

6.5 Noise limits. Where the limit of Category D can be documented as being clearly beyond the state-of-the-art, per MIL-STD-1474, 5.1.1.2, selection of another noise limit should be considered by the procuring activity, as described in MIL-STD-1474, acceptance requirements (5.1.1.3). Particular attention should be given to 5.1.1.3.2.d. When permission is granted to exceed the limits of Category D, the procuring activity should insure that operator and maintenance manuals are prepared in accordance with MIL-STD-1474, manuals requirement (4.3).

#### 6.6 Subject term (key word) listing.

Pump assembly, 125 gallons per minute  
Pump assembly, noise enclosed  
Pump, "self-priming"

6.7 Changes from previous issue. Marginal notations are not used in this revision to identify changes with respect to the previous issue due to the extensiveness of the changes,

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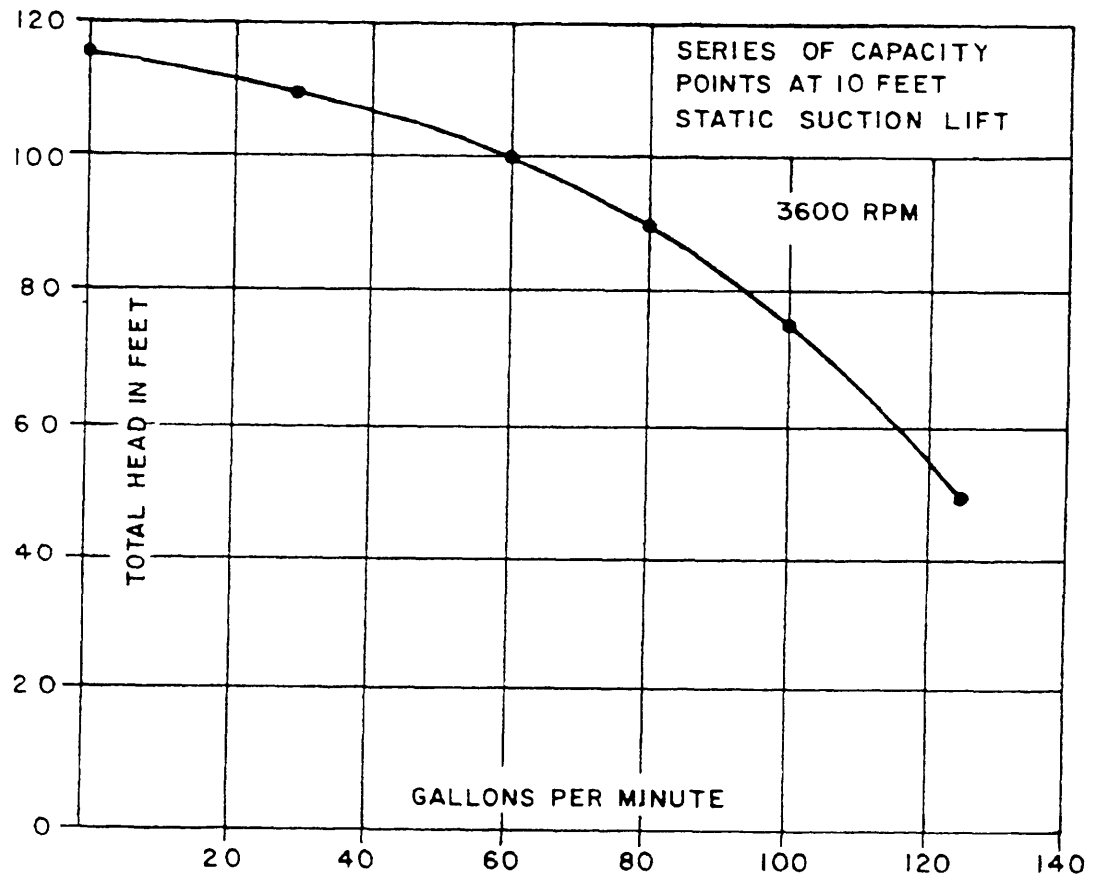
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Revi ew acti vi ty:  
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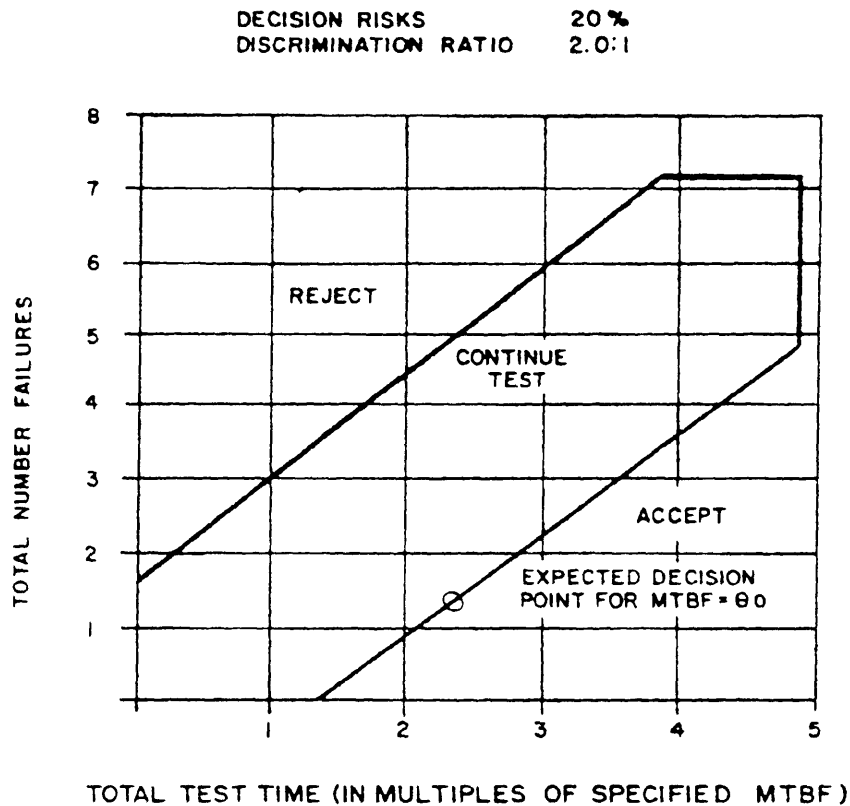
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FIGURE 1. Pump capacities.

X-2404A

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NO. OF  
FAILURES

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	4.87
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 2. Accept- reject criteria.

X-3499





## STANDARDIZATION DOCUMENT IMPROVEMENT PROPOSAL

INSTRUCTIONS

1. The preparing activity must complete blocks 1, 2, 3, and 8. In block 1, both the document number and revision letter should be given.
2. The submitter of this form must complete blocks 4, 5, 6, and 7.
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RECOMMEND A CHANGE:

1. DOCUMENT NUMBER  
MIL-P-52109F

2. DOCUMENT DATE (YYMMDD)  
921209

3. DOCUMENT TITLE Pump Assembly, Centrifugal, 2-Inch, Diesel-Engine-Driven (for Water)

4. NATURE OF CHANGE (Identify paragraph number and include proposed rewrite, if possible. Attach extra sheets as needed.)

5. REASON FOR RECOMMENDATION

6. SUBMITTER

a. NAME (Last, First, Middle Initial)

b. ORGANIZATION

c. ADDRESS (Include Zip Code)

d. TELEPHONE (Include Area Code)  
(1) Commercial  
(if applicable)  
(2) AUTOVON

7. DATE SUBMITTED

8. PREPARING ACTIVITY

a. NAME

Betty Taylor

b. TELEPHONE (Include Area Code)

(1) Commercial  
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(2) AUTOVON  
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c. ADDRESS (Include Zip Code)

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