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SUPERSEDING
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MILITARY SPECIFICATION

FILTER-SEPARATOR, LIQUID FUEL:

FRAME MOUNTED, 350 GPM CAPACITY

(1325 LITERS)

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

1. SCOPE

1.1 Scope. This specification covers a frame-mounted 350 gallon per minute (gpm) (1325 liters) capacity filter-separator for use in removing undissolved water and solid contaminants from petroleum fuels (see 6.3).

2. APPLICABLE DOCUMENTS

2.1 Government documents.

2.1.1 Specifications and standards. The following specifications and standards 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.

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 4330

SPECIFICATIONS

FEDERAL

L-P-378	- Plastic Sheet and Strip, Thin Gauge Polyolefin.
QQ-P-416	- Plating, Cadmium (Electrodeposited).
PPP-B-601	- Boxes, Wood, Cleated-Plywood.
PPP-B-636	- Boxes, Shipping, Fiberboard.
PPP-T-60	- Tape: Packaging, Waterproof.

MILITARY

MIL-P-116	- Preservation, Methods of.
MIL-T-704	- Treatment and Painting of Materiel.
MIL-C-5541	- Chemical Conversion Coatings on Aluminum and Aluminum Alloys.
MIL-A-8625	- Anodic Coatings, for Aluminum and Aluminum Alloys.
MIL-F-8901	- Filter-Separators, Liquid Fuel: and Filter-Coalescer Elements, Fluid Pressure: Inspection Requirements and Test Procedures for.
MIL-W-22248	- Weldments, Aluminum and Aluminum Alloy.
MIL-C-46168	- Coating, Aliphatic Polyurethane, Chemical Agent Resistant.
MIL-F-52308	- Filter Element, Fluid Pressure.

STANDARDS

FEDERAL

FED-STD-H28	- Screw-thread Standards for Federal Services

MILITARY

MIL-STD-105	- Sampling Procedures and Tables for Inspection by Attributes.
MIL-STD-129	- Marking for Shipment and Storage.
MIL-STD-130	- Identification Marking of US Military Property.
MIL-STD-781	- Reliability Tests: Exponential Distribution.
MIL-STD-810	- Environmental Test Methods.
MIL-STD-889	- Dissimilar Metals.
MIL-STD-1186	- Cushioning, Anchoring, Bracing, Blocking, and Waterproofing, with Appropriate Test Methods.
MIL-STD-1472	- Human Engineering Design Criteria for Military Systems, Equipment and Facilities.

2.1.2 Other Government drawings. The following other Government drawings 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

TA13217E9320 - Filter-Separator, Liquid Fuel: Frame Mounted, 350 GPM (1325 liters) Capacity.

(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 activity.)

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.

ALUMINUM ASSOCIATION (AA)

Aluminum Construction Manual, Section 1, Specifications for Aluminum Structures, 7.2 Welding Fabrication.

(Application for copies should be addressed to the Aluminum Association, 420 Lexington Avenue, New York, NY 10017.)

AMERICAN SOCIETY OF MECHANICAL ENGINEERS (ASME)

Boiler and Pressure Vessel Code, Section IX, Welding Qualifications.

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

AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)

B 633 - Electrodeposited Coatings of Zinc on Iron and Steel.
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.)

AMERICAN WELDING SOCIETY, INC. (AWS)

D1.1 - Structural Welding Code, Steel.
D1.2 - Structural Welding Code, Aluminum.

(Application for copies should be addressed to the American Welding Society, Inc., 2501 N.W. Seventh Street, Miami, FL 33125.)

(Nongovernment 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 filter-separator shall be in accordance with Top Assembly TA13217E9320 and as specified herein. The filter-separator shall consist essentially of a vertical aluminum vessel with removable head, a manually operated air vent, inlet and outlet connections, filter elements, canisters, differential pressure gage, a water level sight gage, a manually operated water drain valve, and a ground rod, a ground cable, and attaching hardware. The filter-separator shall be mounted within a tubular rectangular frame. The general requirements, operating and environmental conditions shall be in accordance with MIL-F-8901. The filter-separator shall have a rated flow of 350 gpm (1325 liters) and a maximum working pressure of 150 pounds per square inch (psi) (10.34 bars).

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. 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. When specified (see 6.2), a sample shall be subjected to first article inspection (see 4.3 and 6.4). Any changes or deviations of filter-separators 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 filter-separators conforming to this specification.

3.3 Materials. Materials shall be as specified herein and as shown on the applicable drawings.

3.3.1 Material deterioration prevention and control. The filter-separator 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 operation and storage environment to which the filter-separator 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 filter-separator may be newly fabricated from recovered materials to the maximum extent practicable, provided the filter- separator produced meets all other requirements of this specification. Used, rebuilt or remanufactured components, pieces and parts shall not be incorporated in the filter–separator,

3.4 Environmental conditions.

3.4.1 Operating temperatures. The filter--separator shall permit rated flow in any ambient temperature in the range of plus 125 °F (+52 °C) to minus 25 °F (-32 ‘C).

3.4.2 Storage temperatures. The filter-separator shall. not be damaged by storage at ambient temperatures from plus 160 °F (+71 °C) to minus 50 °F (-46 °C).

3.5 Human factors. The filter-separator shall conform to the applicable human factors engineering criteria as specified in MIL-STD-1472.

3.6. Maintenance ratio. The filter-separator shall have a maintenance ratio of no greater than 0.03.

3.7 Reliability, The specified Mean-Time-Between-Failure (MTBF) shall be 140 hours when the filter separator is operated at rated capacity and tested as specified in 4.5.2.5.

3.8 Transportability. The filter-separator shall withstand the dynamic vibrational stresses encountered in transportation and service. The fllter-separator shall operate as specified herein when tested as specified in 4.5.2.7.

3.9 Performance.

3.9.1 Vessel (tank). The filter-separator vessel shall be fabricated of aluminum alloy as specified on the drawings. The vessel shall withstand a hydrostatic pressure of 225 psi (15.52 bars) without leakage, permanent deformation, or other defects that could harmfully affect the performance and serviceability of the filter-separator.

3.9.1.1 Deck plate. The vessel deck plate shall be fabricated of aluminum alloy of the thickness specified on the drawings. The deck plate shall with-

stand a minimum of 75 psi (5.17 bars) without leakage, permanent deformation, or other defects that could harmfully affect the performance and serviceability of the filter-separator.

3.9.2 Differential pressure. The maximum differential prcssure shall not exceed that specified by MIL-F-8901, table III (see 4.5.2.1.c).

3.9.3 Permanent separator stage. The permanent separator stage shall be as specified by MIL-F-8901, table III. The direction of flow shall be inside-to-outside (see 4.5.2.1.b).

3.9.4 Water removal. The filter-separator shall remove water as specified by MIL-F-8901, table III from influent fuel containing up to 5 percent (by volume) water (see 4.5.2.1.d).

3.10 Government furnished property. The media shall consist of 18 filter elements conforming to MIL-F-52308, and 18 canisters as shown on the applicable drawings. The Government will furnish 36 filter elements NSN 4330-00-983-0998 for each filter-separator (see 6.5), 18 to be installed in the filter-separator and 18 as replacements.

3.11 Differential pressure dial gage. The differential pressure gage shall conform to the dimensions shown and the requirements specified on the applicable drawing. The gage shall provide direct reading of the differential pressure across the filter-separator without manipulation of valves or subtraction of readings and shall perform without structural failure or leakage. The accuracy of the gage shall be such that any error shall not exceed plus or minus 2 psi (0.138 bar).

3.12 Hardware. Bolts, nuts, and washers shall be fabricated from materials as specified on the applicable drawings. When ferrous materials are specified, the bolts, nuts, and washers shall be cadmium plated in accordance with QQ-P-416, type III, class 2 or zinc coated in accordance with ASTM B 633 finish type IV, service condition SC-4. Threads shall conform to FED-STD-H28.

3.13 Cover gasket replacements. Four O-rings, as specified on the applicable drawing, shall be furnished with each filter-separator as replacement Items.

3.14 Sight gage gasket replacement. One gasket as specified on the applicable drawing shall be furnished with each filter-separator as a replacement item.

3.15 Identification marking. The filter-separators shall be identified in accordance with MIL-STD-130. The identification and instruction plates and markings shall be in accordance with the applicable drawing.

3.16 Treatment and painting. The exterior of the filter-separator normally painted 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 top coat color shall be camouflage green 383 conforming to MIL-C-46168. When specified (see 6.2), the filter-separator shall be camouflaged in accordance with camouflage pattern.

3.16.1 Chemical coating. The interior of the filter-separator vessel and all components fabricated from aluminum alloy, which are in direct. contact with the petroleum fuels, shall be anodized in accordance with MIL-A-8625, type II, Class 1, to a thickness of 0.0007 inch for wrought aluminum alloys or 0.0004 inch for cast aluminum alloys, or coated in accordance with MIL-C-5541, class 1A.

3.17 Cleaning and drying after tests. After conclusion of all tests, and after removal of the canisters and elements, the filter-separators shall be wiped clean and air dried at room temperature to exhaust all traces of fuel and water.

3.18 Workmanship. The filter-separators shall be free from defects such as misalined components, incomplete welds, cracks, burns, leaks, and other defects that could impair the operation and serviceability of the filter-separator. All parts shall be clean and free from dirt, sand, grease, oil, and metal chips. Nonfunctional sharp edges and projecting points, which might present a hazard to personnel, shall be avoided.

3.18.1 Welders and welding.

3.18.1.1 Welders. Before assigning any welder to manual welding work covered by this specification, the contractor shall obtain certification that the welder has passed qualification tests as prescribed by the following listed codes for the type of welding operations to be performed and that such qualification is effective as defined by the following codes:

Welding Qualification of the ASME, Section IX.
AWS D1.1, Structural Welding Code, Steel: Section 5, Qualification.
AWS D1.2, Structural Welding Code, Aluminum: Section 5, Qualification.
AA, Aluminum Construction Manual, Section 1, Specifications for Aluminum Structures, 7.2 Welding Fabrication.

Certification shall be made available for review by the contracting officer or designated representative.

3.18.1.2 Welding (aluminum). Welding performed in the fabrication of filter-separators shall be in accordance with MIL-W-22248. Classes of welds shall be as specified on the drawings. Welds shall transmit stress without permanent deformation or failure when the parts connected by the welds are subjected to proof and service loading.

3.19 Adapter and sampling probe . When specified (see 6.2), an adapter and sampling probe shall be furnished with the filter-separator. The adapter and sampling probe shall conform to the dimensions shown and the requirements specified on the applicable drawings.

4. QUALITY ASSURANCE PROVISIONS

4.1 Responsibility for inspection. Unless otherwise specified in the contract, the contractor is responsible for the performance of all inspection requirements as specified herein. Except as otherwise specified in the contract, 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 q aterial.

4.1.2 Parts and components. Parts and components detailed on the drawings shall be inspected in accordance with the Quality Assurance Provisions (QAP) shown on the applicable drawings. The drawings specify the characteristics requiring inspection, the sampling plan, and the basis for acceptance and rejection (see 6.6 and 6.7).

4.1.3 Disassembly inspection. Failure of a performance test by the first article filter-separator shall require disassembly of the filter-separator in the presence of a Government representative. Each disassembled part shall be inspected 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.

4.2 Classification of inspections. Inspections shall be 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. When specified (see 3.2), one or more first article filter-separators will be selected at random by the Government from the filter-separators being produced by production tooling. The filter-separators will be examined as specified in 4,5.1 and subjected to the tests specified in 4.5.2.1 and 4.5.2.6 to determine conformance to the requirements of this specification. When specified (see 6.2), the filter-separators shall also be tested as specified in 4.5.2.2, 4.5.2.3, 4.5.2,4, 4.5.2.5, and 4.5.2.7. The inspection will be performed by the Government. Acceptance of a first article filter-separator shall not exclude the remaining filter-separators from the quality conformance inspection and acceptance provisions specified in section 4. In addition to any test specified as part of the first article test, the Government reserves the right to conduct any and all other tests contained in this specification as part of the first article test and failure of such additional tests shall have the same effect as failure of those tests specified as first article tests.

4.3.1 Inspection failure. Failure of a first article filter-separator to meet any requirement specified herein during and as a result of the examination and tests specified in 4.3 shall be cause for rejection of the filter-separator and shall be cause for refusal by the Government to accept filter-separators until evidence has been provided by the contractor that corrective action has been taken to eliminate the deficiencies.

4.4 Quality conformance inspection.

4.4.1 Sampling. Sampling for examination shall be in accordance with MIL-STD-105, inspection level 11.

4.4.2 Examination.

4.4.2.1 Samples. Samples selected in accordance with 4.4.1 shall be examined for the major and minor defects specified in 4.5.1. AQL shall be 1.0 percent defective for major defects and 4.0 percent defective for minor defects.

4.4.3 Tests.

4.4.3.1 Individual. Each filter-separator shall be tested as specified in 4.5.2.1 a and b. Failure of either test shall be cause for rejection.

4.5 Inspection procedure.

4.5.1 Examination. Filter-separators shall be examined as specified herein for the following defects:

Major

101. Any part or component not in accordance with QAP requirements as shown on the drawings.
102. Materials not as specified (see 3.3).
103. Materials not resistant to corrosion and deterioration, or treated to be resistant to corrosion and deterioration for the applicable storage and operating environments (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 treatment (see 3.3.3).
106. Used, rebuilt or remanufactured components, pieces, or parts incorporated in the filter-separator (see 3.3.4).
107 l Differential pressure dial gage not as specified (see 3.11).
108. Hardware such as bolts, nuts, washers, and screw threads not as specified (see 3.12).
109. Cover gasket replacements missing or not as specified (see 3.13).
110. Sight gage gasket replacement missing or not as specified (see 3.14).
111. Aluminum parts and components not coated as specified (see 3.16.1).
112. Weldings and castings not as specified (see 3.18.1.2 and drawings).
113. Filter-separators not cleaned and air-dried after testing (see 3.17).

114. Workmanship not as specified (see 3.18).
115. Welders certification not available as specified (see 3.18.1.1).
116. Adapter and sampling probe not as specified (see 3.19).

Minor

201. Dimensions, other than those identified by QAP data, not as specified.
202. Identification marking incorrect, illegible, or missing.
203. Instruction plates not as specified.
204. Treatment and painting not as specified (see 3.16).
205. Color not as specified (see 3.16).

4.5.2 Tests.

4.5.2.1 Performance. The filter-separators shall be tested to the following performance requirements as specified in MIL-F-8901, table III:

a. Hydrostatic pressure test.
b. Permanent separator stage (inside-to-outside design).
c. Differential pressure.
d. Water removal, 5 percent.

Nonconformance to 3.9 or to the applicable requirements of MIL-F-8901 shall constitute failure of this test.

4.5.2.2 Environmental conditions.

4.5.2.2.1 High temperature. The filter-separator shall be tested as specified in MIL-STD-81O, method 501.2, procedure I. The maximum test temperatures for storage shall be 160 ‘F (+71 ‘C), and the maximum operating temperature shall be 125 “F (+52 “C). The operating period of procedure 11 shall be 1 hour or the operating time required to check for any component failure due to high temperatures.

4.5.2.2.2 Low temperature. The filter-separator shall be tested as specified in MIL-STD-810, method 502.2, procedure 1. The minimum test temperatures for storage shall be minus 50 °F,(-46 °C) and the minimum operating temperatures shall be minus 25 °F (-32 °C). The operating period of procedure 11 shall be 1 hour or the operating time required to check for any component failure due to low temperatures.

4.5.2.2.3 Failure criteria. Nonconformance to 3.4 or to the applicable requirements of MIL-STD-810 shall constitute failure of either temperature test.

4.5.2.3 Human factors. The filter-separator shall be evaluated to determine conformance to 3.5. Nonconformance shall constitute failure of this test.

4.5.2.4 Maintainability.

4.5.2.4.1 Maintenance ratio. The maintenance ratio shall be computed during first article testing to determine the total active maintenance man-hours (scheduled and unscheduled), required to the total operating time. Non-conformance to 3.6.1 shall constitute failure of this test.

4.5.2.5 Reliability. Using the MTBF specified in 3.7, the first article . filter-separator(s) shall be tested as specified in 4.5.2.1 and 4.5.2.2 with "accept" and "reject" criteria in accordance with MIL-STD-781, test plan IV. At completion of above testing, continue testing in accordance with 4.5.2.1.d until "accept" or "reject" decision is reached. A failure is defined as any malfunction which causes or may cause:

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

Nonconformance to 3.7 shall constitute failure of this test, Dependent failures or malfunctions occurring as the result of improper maintenance procedures or operator error are excluded from consideration as chargeable failures. Replace-ment of filter elements shall not be considered a failure.

4.5.2.6 Differential pressure dial gage. Subject the gage to a hydrostatic pressure equal to the maximum scale pressure, and hold at this pressure for a minimum of 30 minutes. Within 10 minutes after the pressure is released and without recalibration or adjustment, readings shall be taken at three intervals on the scale; the anticipated initial operating pressure, the pressure at which the elements are changed, and the maximum scale pressure. The gage shall be tapped sharply with the finger at approximately the center of the scale area before each reading. A dead weight tester or mercury manometer with air pressure or calibrated check gage shall be used in calibrating the gage. Testing of the gage shall be in a temperature of 20 °C plus or minus 5.6 °C (68 °F plus or minus 10 °F). Nonconformance to 3.11 shall constitute failure of this test.

4.5.2.7 Transportability. The filter-separator shall be transported by a 2-1/2 ton cargo truck over cross-country at an average speed of 15 mph (24 Kph)for a total of 100 miles (161 kilometers). Damage to the filter-separator or components or nonconformance to 3.8 shall constitute failure of this test.

4.6 Inspection comparison. The Government: may select filter-separators at any time during the contract production period and subject these filter-separators to the examination specified in 4.5.1 and the tests specified in 4.5.2 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 filter-separators selected at random from those which have been accepted by the Government and will not include the previously inspected first article filter-separators. 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 filter-separator 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 filter-separator(s) and shall be cause for refusal by the Government to continue acceptance of production filter-separate:-s 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 filter-separators 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 filter-separators 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.

4.7 Inspection of packaging.

4.7.1 Quality conformance inspection of pack.

4.7.1.1 Unit of product. For the purpose of inspection, a completed pack prepared for shipment shall be considered a unit of product.

4.7.1.2 Sampling. Sampling for examination shall be in accordance with MIL-STD-105.

4.7.1.3 Examination. Samples selected in accordance with 4.7.1.2 shall be examined for the following defects. AQL shall be 1.0 percent defective.

117.	Canisters and filter elements not installed.
118.	Dust plug and dust cap not installed.
119.	Drain valve not open.
120.	Extra elements not preserved by one of the methods specified.
121.	Extra O-rings and sight gage gasket not preserved as specified,
122.	Consolidation of components not as specified.
123.	Components not secured within the box in a manner to prevent free movement and damage as specified for level A.
124.	Shipping container not as specified for level A.
125.	Commercial packing not in accordance with the referenced document.
126.	Marking missing, illegible, incorrect, or incomplete for level A or commercial.

5. PACKAGING

5.1 Preservation. The filter-separator with canisters and filter elements installed shall not require preservation (see 6.8). The water drain valve shall be opened. Dust plug and cap shall be installed.

5.1.1 Extra elements. Each extra filter element shall be preserved by one of the following methods:

a. Each filter element shall be preserved in accordance with MIL-P-116, method IA-13.

b. Each filter element shall. be inserted in a polyethylene bag fabricated from material conforming to L-P-378, type I, class 1, grade and finish optional, thickness not less than .0040, and closed by heat sealing. The bag containing the element shall be placed in a close-fitting box conforming to PPP-B-636, W6c. The box shall be closed and sealed as specified for method V in the appendix to the box specification using tape conforming to PPP-T-60, type IV.

5.1.2 Extra O-rings and extra sight gage gasket. Each extra O-ring shall be coiled to the minimum practical diameter and the extra sight gage gasket, laid flat, and each preserved in accordance with MIL-P-116, method IC-1 or IC-3.

5.1.3 Consolidation. The extra filter elements, O-rings, sight gage gasket and the adapter and sampling probe, when furnished, shall be consolidated together in one or more boxes as applicable, conforming to PPP-B-636, V3c, style optional. The contents shall be blocked, braced or cushioned as applicable to prevent movement or damage. Box closure and sealing shall be as specified for method V in accordance with the appendix to the box specification.

5.2 Packing. Packing shall be level A or commercial as specified (see 6.2).

5.2.1 Level A. Each filter-separator and the boxes containing the extra O-rings sight gage gasket, adapter and sampling probe and the extra filter elements required shall be packed together in a close-fitting box conforming to PPP-B-601, overseas type, style A or B. Unless otherwise specified, (see 6.2), an unnailed closure shall be required. The contents shall be secured within the box in a manner to prevent movement and damage in accordance with MIL-STD-1186. The box shall be closed and strapped in accordance with the appendix to the box specification, strapping shall be zinc coated.

5.2.2 Commercial. Each filter-separator and the consolidated components (see 5.1.3) shall be packed together in a container in accordance with ASTM D 3951.

5.3 Marking (see 6.8).

5.3.1 Military. Marking for level A shall be in accordance with MIL-STD-129.

5.3.2 Commercial. Commercial marking shall be in accordance with ASTM D 3951. In addition, weight and cube data shall be marked on the shipping container.

6. NOTE S

6.1 Intended use. The filter-separator is intended for use in airfield refueling systems, motor fuel servicing equipment, and military pipeline systems, for the removal of undissolved water and solid contaminants from aviation, diesel, or motor fuels.

6.2 Ordering data. Procurement documents should specify the following:

a. Title, number, and date of this specification.

b. When first article inspection is required and number of filter-separators to be furnished, when applicable (see 3.2).
c. Color when other than as specified (see 3.16).
d. When and whether forest or desert camouflage is required (see 3.16).
e. When the adapter and sampling probe is required and number to be procured (see 3.19).
f. When the Government will conduct the first article inspection and tests (see 4.1).
g. What additional tests will be performed as part of the first article tests (see 4.3).
h. Degree of packing required (see 5.2).
i. When a nailed closure is required (see 5.2.1).

6.3 Classification change. The type I filter-separator with skids has been discontinued since they are no longer required. Since there is no technical difference between the type I and type II filter-separators except for the skids , the requirement for classifying them is no longer needed.

6.4 First article. When a first article inspection is required, the items should be an initial production model. The first article should consist of one or more units. The contracting officer should include specific instructions in acquisition documents regarding arrangements for examinations, tests, and approval of the first article test results and disposition of the first article.

6.5 Government-furnished property. The contracting officer should arrange to furnish the property specified in 3010.

6.6 Quality Assurance Provisions (QAP). The contracting officer should require the contractor to maintain records of all QAP inspections. A suggested paragraph is as follows:

> "The contractor shall maintain complete records of all examinations and tests performed to verify the requirements of classified QAP characteristics. The records shall include as a minimum, lot size, sample size, drawing requirement, actual measurement, number and type of deficiencies found, quantity approved, quantity rejected, corrected action taken when applicable."

6.7 Definition of QAP. A QAP is a contractual requirement that supplements Section 4 of the specification. QAP indicates the minimum requirements which must be inspected on the product drawings to verify the design objectives of the product and assure interchangeability of repair parts.

6.8 Preservation/packing level marking. Degrees of preservation have not been included, since the protection specified is the minimum acceptable. For purposes of preservation/packing level marking, preservation shall be designated level A.

6.9 Subject term (key word) listing.

Aluminum
Capacity, 350 GPM
Filter-separator
Frame mounted
Fuel
Military design
Petroleum
Welded

6.10 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 - ME
Navy - AS
Air Force - 99

Preparing activity:
Army - ME

Project 4330-0037

Review activities:
Air Force - 11, 84

User activities:
Army - AV, AT
Navy - MC, SH

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STANDARDIZATION DOCUMENT IMPROVEMENT PROPOSAL

(See Instructions – Reverse Side)

1. DOCUMENT NUMBER	2. DOCUMENT TITLE
MIL-F-52666E	Filter-Separator, Liquid Fuel: Frame-Mounted, 350 GPM Capacity (1325 Liters)

3a. NAME OF SUBMITTING ORGANIZATION	4. TYPE OF ORGANIZATION *(Mark one)*
	☐ VENDOR
	☐ USER
b. ADDRESS *(Street, City, State, ZIP Code)*	☐ MANUFACTURER
	☐ 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	b. WORK TELEPHONE NUMBER *(Include Area Code)* – Optional
c. MAILING ADDRESS *(Street, City, State, ZIP Code)* – Optional	8. DATE OF SUBMISSION *(YYMMDD)*

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