INCH-POUND

MIL-F-83428A (USAF)
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SUPERSEDING
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MILITARY SPECIFICATION

FILTER ELEMENT, FLUID, PRESSURE, PERMANENT, DEMINERALIZED WATER SERVICING, MXU-728/E

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 permanent filter element, fluid, pressure, demineralized water servicing, designated MXU-728/E for use in mobile equipment that services demineralized water to aircraft.

* 2. APPLICABLE DOCUMENTS

* 2.1 Government documents.

* 2.1.1 Specifications, standards, and handbooks. The following specifications, standards, and handbooks form a part of this document to the extent specified herein. Unless other 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 solicitatios (see 6.2).

SPECIFICATIONS

MILITARY

* MIL-P-19834 Plates, Identification or Instruction, Metal Foil, Adhesive Backed, General Specification For

STANDARDS

MILITARY

MIL-STD-831 Test Reports, Preparation of

* (Unless otherwise indicated, copies of the military specification standards, and handbooks are available from the Department of the Navy, Defense Printing Service, Detachment Office, 700 Robbins Ave., Bldg. 4D, Philadelphia, PA 19111-5094).

Beneficial comments (recommendations, additions, deletions) and any pertinent data which may be of use in improving this document should be addressed to: the Resources and Logistics Services Division, SA-ALC/TILDD, 485 Quentin Roosevelt Rd, Bldg 171, Post C-12, Kelly AFB, TX 78241-6425 by using the Standardization Document Improvement Proposal (DD Form 1426) appearing at the end of this document or by letter.

AMSC N/A FSC 4930

DISTRIBUTION STATEMENT A. Approved for public release; distribution is unlimited.

* 2.2 Non-Government publications. The following documents form a part of this document to the extent specified herein. Unless otherwise specified, the issues 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)

*	ASTM D 256	Standard Test Methods for Impact Resistance Of Plastics and Electrical Insulating Materials
	ASTM D 638	Method of Test for Tensile Properties of Plastics
	ASTM D 790	Standard Method of Test for Flexural Properties of Plastics

(Application for copies should be addressed to the American Society for Testing and Materials, 1916 Race Street, Philadelphia, PA 19103-1137.)

* (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 First Article. This specification makes provisions for first article testing.

3.2 Materials

3.2.1 Demineralized water. The materials used in the construction of the filter element shall neither affect nor be affected by demineralized water.

* 3.2.2 Screen. The 200-mesh screen (see Figure 1) shall be fabricated from plain weave, 200 by 200 mesh, polytetrafluoreothylene coated (including edges), 300 series stainless steel screen. The uncoated wire comprising the screen shall be 0.0021 inches nominal. The coating thickness shall be 0.0007 $\pm$ 0.0004 inches.

* 3.2.3 Metal parts. Fasteners (such as screen staples) shall be Monel. Element components other than the screen and fasteners (such as screen reinforcement, center tube, end caps) if metal shall be fabricated from 5000 series aluminum alloy.

* 3.2.4 Plastic parts. If used in the construction of the filter element, molded plastic parts shall have the following physical properties:

a. Tensile strength, minimum - 4,500 psi

b. Flexural strength, minimum - 7,500 psi

c. IZOD impact, minimum - 1.5 foot pounds per inch of notch.

* 3.2.5 Gasket. Manufacturers who have obtained prior approval from the procuring activity may furnish their standard commercial gasket rather than the gasket shown in Figure 1.

3.3 Design and construction. The filter element shall be so designed and constructed that no parts will work loose in service. It shall be built to withstand the stresses, jars, vibrations, and other conditions incident to shipping, storage, installation, and flight line service.

* 3.3.1 Functional design. The filter element shall be designed for installation in a type A-2 water truck filter, Fram Corporation Part Number 12705 HPD filter assembly or equal. The dimensions and configuration of the filter element shall be as shown in Figure 1. Flow is out-to-in.

3.3.1.1 The filter element shall be so designed that it can be used with demineralized water.

3.3.2 Reliability. The filter element shall be designed and constructed as specified herein and to successfully complete the tests of 4.4.3 with no failures preventing satisfactory performance.

3.3.3 Maintainability. The filter element shall be so designed and constructed that all maintenance and servicing can be accomplished by the use of conventional, general-purpose tools. Special tools shall be subject to the approval of the procuring activity.

3.4 Performance. When installed in a single element filter assembly, the filter element shall be capable of meeting the following performance requirements:

* a. Withstanding a 40 psi differential pressure without failure.

* b. 100-hour exposure to 125°F demineralized water with a pH ranging from 6.0 to 9.5 with no significant change to either the element or the water.

* c. Having a pressure drop across the element not exceeding 1 psi at a flow rate of 25 gpm.

* 3.5 Element rod seals. A package of two element rod seals shall be supplied with each element. One seal shall be 1 1/4 " OD x 15/32" ID. The other seal shall be 1" OD x 11/32" ID. Seal material shall be 60 durometer Buna A. All specified numerical characteristics of the element rod seals are nominal. The package shall be marked to identify and indicate the intended purpose of the two different element rod seals: The first for 1/2" rods, the second for 3/8" rods.

3.5.1 Nameplate. A nameplate conforming to Type I of MIL-P-19834, shall be supplied one per each 12 elements shipped. Attaching instructions shall be affixed to each nameplate. The nameplate shall conform to Figure 2.

3.6 Workmanship. The filter element, including all parts, shall be constructed and finished in a thoroughly workmanlike manner. Particular attention shall be given to neatness and thoroughness of marking of parts and assemblies and freedom of parts from burrs and sharp edges.

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 this 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 be come 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 accept defective material.

4.2 Classification of tests. The inspection and testing of the filter element shall be classified as follows:

a. First article testing

b. Quality conformance tests.

4.3 First article testing (see 6.2).

* 4.3.1 First article test sample. The first article test sample shall consist of four filter elements representative of the production filter elements. One element is for the paragraph 4.5.2 Flow test and the paragraph 4.5.3 Differential pressure test. Two elements are for the paragraph 4.5.4 Demineralized water immersion test. One element is for submittal, untested with the first article test report to the procuring activity.

* 4.3.2 Test report. Upon completion of first article testing, a test report in accordance with MIL-STD-831 shall be prepared. The report shall be authenticated by the contractor and shall be countersigned by the DCASR Quality Assurance Representative. The test report shall as minimum contain test procedures, descriptions of test apparatus, copies of original data sheets, testing chronology, test results, pressure drop curve, before and after color photographs of test elements and dimensioned drawing of the element showing constructional features and details and specific materials used. The original copy of the test report shall be submitted accompanied by an untested element.

4.3.3 First article tests. The first article tests shall consist of all tests specified in 4.5.

4.4 Quality conformance testing. Quality conformance testing shall consist of the individual test.

4.4.1 Individual test. Each filter element shall be subjected to the test specified in 4.5.1.

4.5 Test methods

4.5.1 Examination of product. Each element shall be examined as required to determine conformance with the manufacturer's drawings. The element shall

be inspected to determine if all points are properly sealed and that no holes, tears or defects have occurred in the element.

* 4.5.2 Flow test. With the filter element mounted in a single element test fixture, the element shall be subjected to a flow test at flow rates from 5 gpm to 30 gpm at 5 gpm increments. Flow shall be out-to-in. During this test, the differential pressure across the element shall be recorded. Filtered tap water shall be used as the test fluid.

* 4.5.3 Differential pressure test. With the element mounted in a single element test fixture, the element shall be subjected to a differential pressure of 40 psi for 10 minutes. The test fluid shall be contaminated tap water. Contaminate shall be AC Spark Plug coarse grade test dust. Upon conclusion of the test, the test fixture shall be disassembled and the element examined, and the element shall show no evidence of structural failure.

* 4.5.4 Immersion test. Two filter elements shall be subjected to a demineralized water immersion test. The first element shall be fully immersed for 100 hours in water initially containing not more than 5 ppm total solids and having a pH of 6.0, +0.1, -0. The volume of water shall be the same as the volume of water in the single element test fixture with element in place. The water shall be maintained at 125°F + or - 5°F during the soak test. The test water shall be vigorously stirred at the beginning and end of every regular eight hour work day during the course of the 100 hour immersion period. At the conclusion of the 100 hour immersion period, the test sample shall be visually examined for evidence of corrosion and deterioration, and the total solids and pH of the test water shall be determined. Either corrosion or deterioration of the element shall cause rejection. Either total solids greater than 100 ppm or pH less than 5.0 shall cause rejection. The second element shall be tested as above except that the test water prior to element immersion shall have a pH of 9.5, +0, -0.1. The cause for rejection shall be same as before except water pH, after immersion testing, greater than 10.5 shall cause rejection. Total solids shall be determined in accordance with Test Method 3290 of Federal Test Method 791.

4.5.5 Plastic material test. Sections of plastic material, if used in the construction of end caps and elements or specially prepared test specimens, shall be tested as follows to verify plastic material compliance. This test data developed shall be included in the test report:

a. Tensile strength - ASTM D 638, type I

b. Flexural strength - ASTM D 790

c. IZOD impact strength (notched) - ASTM D 256, method A.

* 4.5.6 Packaging inspection. The preservation, packing, and marking shall be inspected to verify conformance to the requirements of Section 5.

* 5. PACKAGING

* 5.1 Preservation, packaging and packing. Preservation, packaging and packing shall be specified in accordance with the instructions of the procuring activity.

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 MXU-728/E permanent filter element is intended for use in the Type A-2 Demineralized Water Truck and replaces the MIL-F-27859 disposable filter element.

* 6.2 Acquisition requirements. Acquisition documents should specify the following:

a. Title, number, and date of this 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 first article is required (see 4.3).

* d. Levels of preservation and packing (see Section 5).

* 6.3 Subject term (key word) listing.

mesh screen
plastic parts
gaskets
tensile strength
flexural strength
IZOD impact
flow
rod seals

* 6.4 Changes from previous issue. The margins of this specification are marked with asterisks to indicate where changes (additions, modifications, corrections, deletions) from the previous issue were made. This was done as a convenience only and the Government assumes no liability whatsoever for any inaccuracies in these notations. Bidders and contractors are cautioned to evaluate the requirements of this document based on the entire content irrespective of the marginal notations and relationship to the last previous issue.

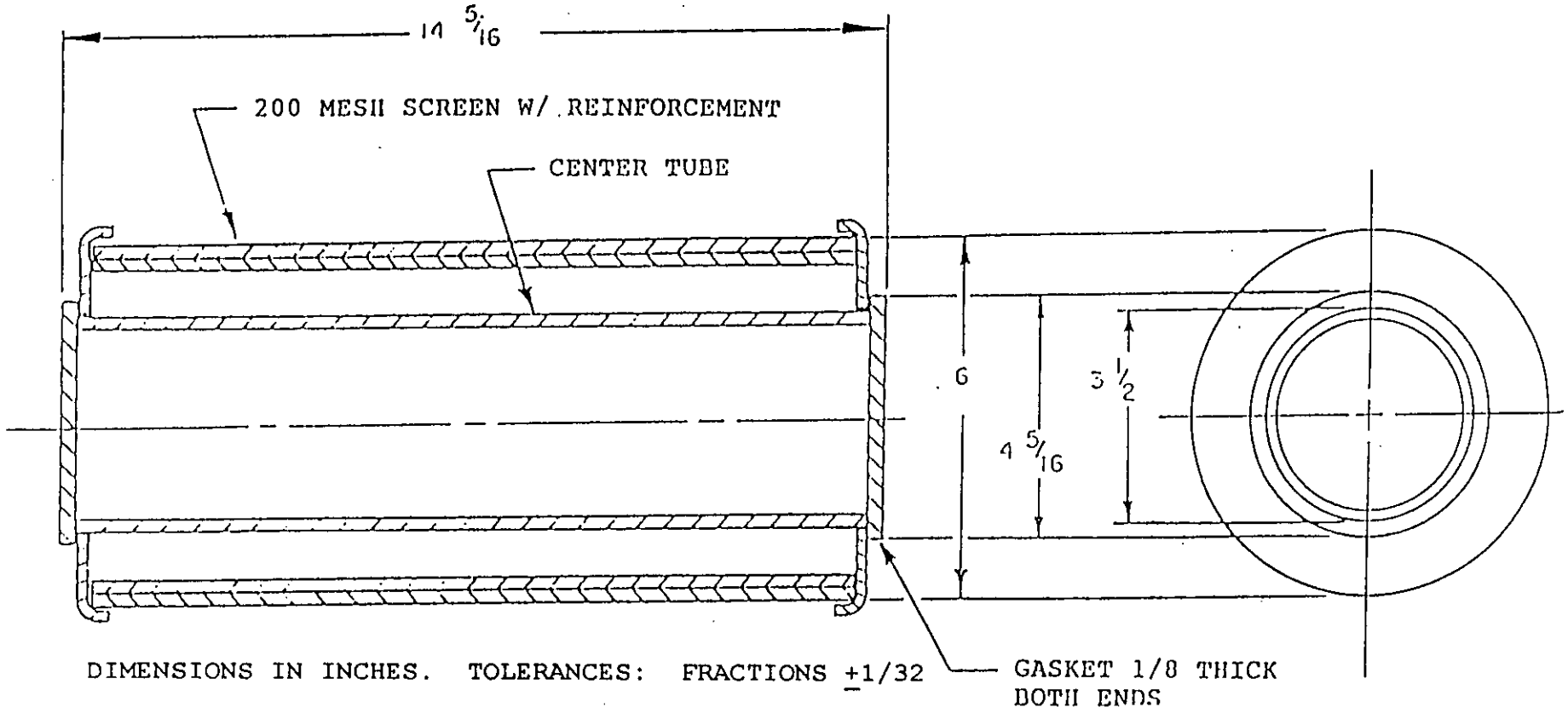
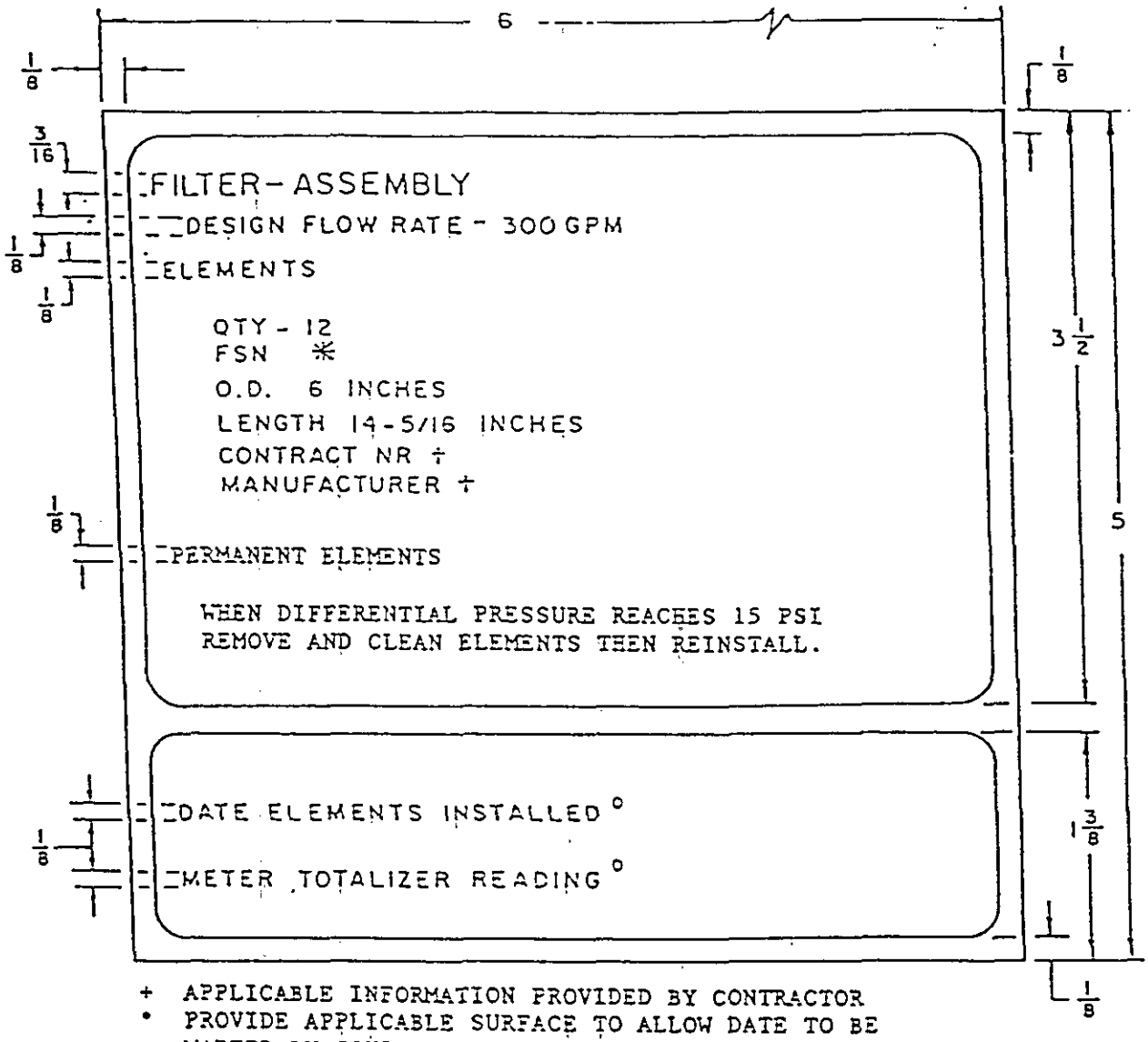


FIGURE 1. Filter element.



\+ APPLICABLE INFORMATION PROVIDED BY CONTRACTOR
• PROVIDE APPLICABLE SURFACE TO ALLOW DATE TO BE MARKED BY GOVERNMENT PERSONNEL
* TO BE SUPPLIED BY CONTRACTOR

NOTES:
1. ALL LETTERING SHALL BE 3/32 - INCH HIGH, UNLESS OTHERWISE NOTED
2. BACKGROUND SHALL BE BLUE
3. MATERIAL - MIL-P-19834

FIGURE 2. Nameplate.

Custodian:
Air Force - 99

Review activity:
Air Force - 11

Preparing activity:
Air Force - 82

(Project No. 4930-F338)