

MILITARY SPECIFICATION**FUEL SYSTEMS: AIRCRAFT, INSTALLATION
AND TEST OF**

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

1. SCOPE

1.1 This specification covers the general requirements for functional operation, installation, and testing of fuel systems for all piloted aircraft, target drones and guided missiles, and shall be followed except as otherwise authorized by the procuring activity for each design.

2. APPLICABLE DOCUMENTS

2.1 The following documents, of the issue in effect on date of invitation for bids or request for proposal, form a part of this specification to the extent specified herein:

SPECIFICATIONS**MILITARY**

- MIL-N-4180 — Nozzles, Fuel and Oil Servicing.
- MIL-E-5007 — Engines, Aircraft, Turbojet, General Specification for.
- MIL-B-5087 — Bonding, Electrical (for Aircraft).
- MIL-G-5572 — Gasoline, Aviation, Grades 80/87, 91/96, 100/130, 115/145.
- MIL-T-5578 — Tanks; Fuel, Aircraft, Self-Sealing.

- MIL-J-5624 — Jet Fuel, Grades JP-4 and JP-5.
- MIL-N-5877 — Nozzle, Pressure Fuel Servicing, Locking, Type D-1.
- MIL-T-6396 — Tank, Fuel, Oil, Water-Alcohol, Coolant Fluid, Aircraft, Non-Self-Sealing, Removable, Internal.
- MIL-L-6730 — Lighting Equipment, Exterior, Installation of Aircraft (General Specification).
- MIL-C-7244 — Cap and Adapter Unit, Filler, Tank.
- MIL-C-8605 — Cap, Pressure Fuel Servicing.
- MIL-F-8615 — Fuel System Components, General Specification for.
- MIL-D-8706 — Data and Tests, Engineering, Contract Requirements for Aircraft Weapon Systems.
- MIL-D-8708 — Demonstration Requirements for Airplanes.
- MIL-S-8710 — Strainer, Aircraft Fuel System, General Specification for.

MIL-F-17874B

- MIL-F-18802 — Fuel and Oil Lines, Aircraft, Installation of.
- MIL-T-18847 — Tank, Fuel, Aircraft, Auxiliary External, Design and Installation of.
- MIL-A-19736 — Air Refueling Systems, General Specification for.
- MIL-A-25896 — Adapter, Pressure Fuel Servicing, Aircraft, Nominal 2½ Inch Diameter.
- MIL-D-70327 — Drawings, Engineering and Associated Lists.

STANDARDS

MILITARY

- MS 29514 — Flange, Adapter Locking, Pressure Fuel Servicing.
- MS 33502 — Knob, Control, Fuel Selector — Standard Shape for.

AIR FORCE - NAVY AERONAUTICAL

AN2555 Nozzle — Aircraft Fueling.

(Copies of specifications, standards, drawings, and publications required by suppliers in connection with specific procurement functions should be obtained from the procuring activity or as directed by the contracting officer.)

2.2 Other publications. The following document forms a part of this specification to the extent specified herein. Unless otherwise indicated, the issue in effect on date of invitation for bids or request for proposal shall apply:

U.S. COMMITTEE ON EXTENSION TO THE STANDARD ATMOSPHERE

U. S. Standard Atmosphere, 1962

(Application for copies of the above publication should be addressed to the Superintendent of Documents, Government Printing Office, Washington, D. C. 20402.)

3. REQUIREMENTS

3.1 Components. The approval and installation of components under the requirements of this specification applies to functional components as distinguished from such other components as lines, fittings, and tanks. Functional components will generally include but not be limited to the following: Pumps, valves, strainers, filters, filler units, filler caps, fuel center of gravity (cg) control units, fuel transfer pressure regulators, fuel tank pressure control units. For logistic reasons interchangeable components shall be utilized to a maximum extent throughout the fuel system.

3.1.1 Components approval. All functional components employed in the fuel system shall have passed the qualification tests required in the applicable specifications. A list of all functional components and their respective qualification test reports shall be submitted as required by MIL-D-8706 for review and approval prior to installation of the components in a production configured aircraft. Components listed for approval shall include sufficient identifying data, including the following, as applicable.

- (a) Name of component.
- (b) Vendor's part number and/or drawing number.
- (c) Applicable Government specifications and drawings (and deviations, if any).
- (d) Present qualification or approval status.
- (e) Aircraft manufacturer's drawing and part number.
- (f) Aircraft manufacturer's procurement specification.
- (g) Weight.

3.1.1.1 Standard components. Components in this category are those which are covered by applicable Qualified Products Lists (QPL), Government specifications, and drawings.

Those components which are listed on an applicable QPL or other Government approved lists will be approved. Those components currently undergoing Government qualification tests may be approved subject to satisfactory completion of the tests. In the case of components which are qualified or are undergoing qualification, but which are being applied to special installations not adequately covered by applicable specifications, approval may be granted subject to satisfactory service and subject to completion of special qualification tests pertinent to the particular installation. In the case of those components which are not listed on an applicable Government approval list and which have not been submitted for Government qualification tests, the submittal of samples for such tests will normally be required; approval, in this instance may be granted subject to satisfactory completion of such qualification tests.

3.1.1.2 Nonstandard components. Components in this category will be considered those which do not apply under a specific Government specification or drawing but which are commercially available. Approval may be granted on the basis of prior satisfactory service experience and subject to satisfactory service in the particular application.

3.1.1.3 New development components. Components in this category will generally be considered those which must be designed for the specific aircraft application. Those components will require the submission by the aircraft manufacturer of detailed procurement specifications and envelope drawings in accordance with MIL-D-70327 for release by the Government. Procurement specifications shall be based upon the applicable requirements of MIL-F-8615, and shall be prepared in accordance with the appendix thereto.

3.1.2 Components installation. All components shall be designed to permit ease of installation and removal. Components requiring frequent servicing shall be installed so as to be easily accessible. Quick-opening access

doors in the aircraft skin shall be provided where necessary.

3.2 Materials. All materials shall be suitable for the purpose intended. Magnesium parts shall not be used in the fuel system.

3.3 Design and construction.

3.3.1 Fuel. The fuel system for reciprocating engine aircraft shall be suitable for use with all grades of fuel conforming to MIL-G-5572. The fuel system for gas turbine, ram jet and pulse jet engine aircraft, unless otherwise specified in the aircraft detail specification, shall be suitable for normal operation with fuel conforming to MIL-J-5624, grades JP-4 and JP-5.

3.3.2 Piping. Piping shall be installed in accordance with MIL-F-18802.

3.3.2.1 Line sizes. Line sizes shall be chosen to meet the requirements of 3.3.5. In addition, line sizes shall be adequate for satisfactory normal fuel system operation down to -65° F. ambient air temperature for both JP-4 and JP-5 fuel, provided the -65° F. air temperature does not drop the fuel temperature below the freezing point of the fuel.

3.3.3 Tanks. Internal fuel tanks, except self-sealing and integral, shall be in accordance with MIL-T-6396. Self-sealing tanks shall be in accordance with MIL-T-5578. All fuel tanks shall be securely anchored to the aircraft structure to prevent movement of the tank in any direction with respect to the aircraft. Each individual cell shall be capable of installation and removal without requiring removal of any other cell or major component of the structure. The installation shall not be such as to require jacking of the wings or nacelle to allow replacement of any cell. It is desirable for the cell to be removable through a nonstressed panel, involving an absolute minimum of bolts and attaching screws. External auxiliary fuel tanks shall be in accordance with MIL-T-18847. Integral