

AEROSPACE	
RECOMMENDED PRACTICE	

ARP5794™

Issued

Revised

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Superseding ARP5794

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Centrifugal Aircraft Fuel Pump Requirements, Design and Testing, Aerospace Standard

RATIONALE

This Aerospace Recommended Practice is intended to provide general guidelines for the design, development, and gualification of aircraft, tank mounted fuel booster pumps. This revision adds references to SAE documents ARP594 and ARP6385 which provide additional details on proper methods for thermal, mechanical, and electrical safety design of pump components.

1. SCOPE

This specification covers the general design, testing, and safety requirements for aircraft tank mounted fuel booster pumps used for engine fuel feed, transfer, and jettison.

1.1 Purpose

This document is intended to provide guidance for the proper design, testing, and certification of aircraft, tank mounted fuel pumps. References to key considerations for safety compliance to all applicable industry regulations are directly discussed or references are provided to other SAE documents. This document is meant to complement a Procurement Agency's detail technical specification for a given design application or use. This document was developed as the replacement document for MIL-P-5238C, which was made inactive in 1996.

2. APPLICABLE DOCUMENTS

The following publications form a part of this document to the extent specified herein. The latest issue of SAE publications shall apply. The applicable issue of other publications shall be the issue negotiated between Seller and Procurement, except where specific revisions have been called out on selected specifications. In this case the cited revision or a letter revision shall apply. In the event of conflict between the text of this document and 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.

2.1 SAE Publications

Available from SAE International, 400 Commonwealth Drive, Warrendale, PA 15096-0001, Tel: 877-606-7323 (inside USA and Canada) or +1 724-776-4970 (outside USA), www.sae.org.

AMS2175 Castings, Classification and Inspection of

AMS3216 Fluorocarbon (FKM) Rubber High Temperature - Fluid Resistant Low Compression Set 70 to 80

AMS-A-21180 Aluminum Alloy Castings, High Strength

suggestions.

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AMS-P-5315	Acrylonitrile-butadiene (NBR) Rubber for Fuel-Resistant Seals 60 to 70
AMS-QQ-P-416	Plating, Cadmium (Electrodeposited)
AMS-R-83485	Rubber, Fluorocarbon Elastomer, Improved Performance at Low Temperatures
AIR4246	Contaminants for Aircraft Turbine Engine Fuel System Component Testing
ARP594	Fuel Pump Thermal Safety Design
ARP1401	Aircraft Fuel System and Component Icing Test
ARP4754	Guidelines for Development of Civil Aircraft and Systems
ARP5316	Storage of Elastomer Seals and Seal Assemblies Which Include an Elastomer Element Prior to Hardware Assembly
ARP6385	Aircraft Fuel Pump Mechanical and Electrical Safety Design
ARP8615	Fuel System Components: General Specification ForAS5202Port or Fitting End, Internal Straight Thread, Design Standard
AS5440	Hydraulic Systems, Military Aircraft, Design and Installation, Requirements For
AS8879	Screw Threads - UNJ Profile, Inch Controlled Radius Root with Increased Minor Diameter
AS50881	Wiring Aerospace Vehicle
SAE J1926-1	Connections for General Use and Fluid Power - Ports and Stud Ends with ASME B1.1 Threads and O-Ring Sealing - Part 1: Threaded Port with O-Ring Seal in Truncated Housing

2.2 ASME Publications

Available from ASME, P.O. Box 2900, 22 Law Drive, Fairfield, NJ 07007-2900, Tel: 800-843-2763 (U.S./Canada), 001-800-843-2763 (Mexico), 973-882-1170 (outside North America), <u>www.asme.org</u>.

- Y14.24 Types and Applications of Engineering Drawings
- Y14.34 Associated Lists
- Y14.35 Revision of Engineering Drawings and Associated Documents
- Y14.100 Engineering Drawing Practices
- 2.3 Military Publications

Available from DLA Document Services, Building 4/D, 700 Robbins Avenue, Philadelphia, PA 19111-5094, Tel: 215-737-8000, <u>http://quicksearch.dla.mil/</u>.

- MIL-DTL-25988 Rubber, Fluorosilicone Elastomer, Oil-&-Fuel-Resistant, Sheets, Strips, Molded Parts, and Extruded Shapes
 MIL-DTL-83133 Turbine Fuel, Aviation, Kerosene Type, JP-8 (NATO F-34), NATO F-35, and JP-8+100
- (NATO F-37) (NATO F-37)
- MIL-H-8891 Hydraulic Systems, Manned Flight Vehicles, Type III Design, Installation and Data Requirements for, General Specification for

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MIL-PRF-6855	Rubber, Synthetic, Sheets, Strips, Molded or Extruded Shapes				
MIL-S-7742	Screw Threads, Standard, Optimum Selected Series, General Specification for				
MIL-STD-129	Military Marking for Shipment and Storage				
MIL-STD-202	Test Method Standard Electronic and Electrical Component Parts				
MIL-STD-461	Requirements for the Control of Electromagnetic Interference Characteristics of Subsystems and Equipment				
MIL-STD-464	Electromagnetic Environmental Effects Requirements for Systems				
MIL-STD-704	Aircraft Electric Power Characteristics				
MIL-STD-810	Environmental Engineering Considerations and Laboratory Tests				
MIL-STD-882	System Safety				
MIL-STD-889	Dissimilar Metals				
MIL-STD-31000A	Technical Data Packages				
2.4 Other Publications					
Title 14, Code of Fed	deral Regulations – Aeronautics and Space, Section 25.981, Fuel Tank Ignition Prevention				
ASTM D910	Standard Specification for Aviation Gasolines				
FAA AC20-115	Airborne Software Development Assurance Using EUROCAE ED-12() and RTCA DO-178()				
FAA AC20-152	RTCA, Inc., Document RTCA/DO-254, Design Assurance Guidance for Airborne Electronic Hardware				
FAA AC 20-155	Industry Documents to Support Aircraft Lightning Protection Certification				
FAA AC 20-158	The Certification of Aircraft Electrical and Electronic Systems for Operation in the High-Intensity Radiated Fields (HIRF) Environment				
FAA AC 25.981-1C	Federal Aviation Administration Advisory Circular – Fuel Tank Ignition Source Prevention Guidelines				
FAA AC 25.1309	System Design and Analysis				
FAA AC 20-136	Aircraft Electrical and Electronic System Lightning Protection				
FAR 23	Airworthiness Standards: Normal, Utility, Acrobatic, and Commuter Category Airplanes				
FAR 25	Airworthiness Standards: Transport Category Airplanes				
FAR 27	Airworthiness Standards: Normal Category Rotorcraft				
FAR 29	Airworthiness Standards: Transport Category Rotorcraft				
RTCA DO-160	Environmental Conditions and Test Procedures for Airborne Equipment				

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

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