



AEROSPACE STANDARD

AS7413™**REV. A**

Issued	2001-12
Reaffirmed	2011-06
Stabilized	2019-04

Superseding AS7413

Coupling Assemblies, Quick Disconnect, Automatic Shutoff

RATIONALE

This document has been determined to contain basic and stable technology which is not dynamic in nature.

STABILIZED NOTICE

This document has been declared "Stabilized" by the SAE G-3, Aerospace Couplings, Fittings, Hose, Tubing Assemblies Committee and will no longer be subjected to periodic reviews for currency. Users are responsible for verifying references and continued suitability of technical requirements. Newer technology may exist.

SAE Technical Standards Board Rules provide that: "This report is published by SAE to advance the state of technical and engineering sciences. The use of this report is entirely voluntary, and its applicability and suitability for any particular use, including any patent infringement arising therefrom, is the sole responsibility of the user."

SAE reviews each technical report at least every five years at which time it may be revised, reaffirmed, stabilized, or cancelled. SAE invites your written comments and suggestions.

Copyright © 2019 SAE International

All rights reserved. No part of this publication may be reproduced, stored in a retrieval system or transmitted, in any form or by any means, electronic, mechanical, photocopying, recording, or otherwise, without the prior written permission of SAE.

TO PLACE A DOCUMENT ORDER: Tel: 877-606-7323 (inside USA and Canada)
Tel: +1 724-776-4970 (outside USA)
Fax: 724-776-0790
Email: CustomerService@sae.org
<http://www.sae.org>

SAE WEB ADDRESS:

Full document details: [SAE AS7413A](#)

SAE values your input. To provide feedback on this Technical Report, please visit <http://standards.sae.org/AS7413A>

Documents
Document Sharing Hub

1. SCOPE:

This specification establishes requirements for automatic shutoff, quick-disconnect coupling assemblies for fuel and oil lines.

1.1 Classification:

Quick-disconnect couplings shall be of the following types and classes:

Type I - Fuel Line Coupling

Class A: -65 to +135 °F fuel and +160 °F ambient

Class B: -65 to +200 °F fuel and +350 °F ambient

Class C: -65 to +300 °F fuel and +600 °F ambient

Type II - Oil Line Coupling

Class A - Petroleum Oil (J1966): -65 to +250 °F oil and +160 °F ambient

Class B - Synthetic Oil (MIL-PRF-7808): -65 to +350 °F oil and +350 °F ambient

Class C - Synthetic Oil (MIL-PRF-23699): -40 to +400 °F oil and +400 °F ambient

2. REFERENCES:

2.1 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 in effect on the date of the purchase order. 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.

2.1.1 SAE Publications: Available from SAE, 400 Commonwealth Drive, Warrendale, PA 15096-0001.

AMS 3216	Fluorocarbon (FKM) Rubber, Fuel and Oil Resistant, 70-80
AMS 3331	Fluorosilicone (FVMQ) Rubber, Fuel and Oil Resistant, 65-75
AMS-QQ-P-35	Passivation Treatments For Corrosion Resistant Steels
AMS-QQ-C-320	Chromium Plating (Electrodeposited)
ARP868	Pressure Drop Test for Fuel System Components
AS8879	Screw Threads – UNJ Profile, Inch
AS1946	Hose Assembly, Polytetrafluorethylene (PTFE), up to 450 °F (232 °C) and 1500 psi (10500 kPa), Procurement Specification
J1966	Lubricating Oil, Aircraft Piston Engine (Nondispersant Mineral Oil), Standard

2.1.2 U.S. Government Publications: Available from DODSSP, Subscription Services Desk, Building 4D, 700 Robbins Avenue, Philadelphia, PA 19111-5094.

MIL-PRF-680	Degreasing Solvent
MIL-P-5315	Packing, Preformed, Hydrocarbon Fuel Resistant
MIL-R-7362	Rubber, Synthetic, Solid, Sheet, Strip, and Fabricated Parts, Synthetic Oil Resistant
MIL-PRF-7808	Lubricating Oil, Aircraft Turbine Engine, Synthetic Base
MIL-DTL-8795	Hose Assemblies, Elastomeric-Hydraulic Fluid, Fuel and Oil Resistant, General Specification for
MIL-PRF-23699	Lubricating Oil, Aircraft Turbine Engines, Synthetic Base
MIL-C-81706	Chemical Conversion Materials for Coating Aluminum and Aluminum Alloys
MIL-STD-130	Identification Marking of U.S. Military Property
MIL-STD-810	Environmental Engineering Considerations and Laboratory Tests
MIL-STD-889	Dissimilar Metals
MS8000	Hose Assembly, Detachable Fittings, Tetrafluorethylene, High Temperature, Medium Pressure, Flare to Flare
MS8001	Hose Assembly, Detachable Fittings, Tetrafluorethylene, High Temperature, Medium Pressure, Flareless to Flareless
MS28741	Hose Assembly, Detachable End Fitting, Medium Pressure

2.2 Definitions:

The following definitions are applicable to this specification.

COUPLER HALF: The half that contains the locking device which holds the coupling halves together in the coupled position; generally connected to a hose assembly and is known as the hose attaching half, or female half.

FIXED HALF: The half which, normally, is rigidly mounted to a bulkhead, firewall, or tube assembly; also known as the bulkhead mounting half, nipple, or male half.

3. TECHNICAL REQUIREMENTS:

3.1 First Article:

The supplier shall provide sample coupling assemblies of each size being purchased to the purchaser, prior to starting production. These samples shall demonstrate that the production methods and design choice will produce coupling assemblies that comply with the requirements specified herein. Approval of first article samples will not relieve the supplier of the obligation to furnish coupling assemblies conforming to the applicable provisions of this document. Any changes or deviations of the production coupling assemblies from the first article sample during production will be agreed upon by the supplier and the purchaser.

3.2 Design and Construction:

The complete quick-disconnect coupling assembly shall consist of two separate coupling halves. A self-sealing shutoff device shall be incorporated in each coupling half, and the locking device for the coupling shall be included in the coupler half. The purchaser shall have the option of procuring the complete quick-disconnect coupling assembly or either of the separate coupling halves.

3.2.1 Design: Coupling assemblies configurations shall not exceed the basic outline dimensions and weights shown on Figure 1 and Table 1. One coupling half shall be primarily designed for, but not limited to bulkhead or firewall mounting. A means for quick separation of the coupling halves shall be incorporated with provisions for automatically sealing the contained fluid against flow during the disconnect cycle. When connected, the coupling assembly shall permit fluid flow in either direction in accordance with the rated flows and pressure drops specified in Table 1 and at the rated pressures specified in Table 2. Flow shall not be blocked under surge conditions.

3.2.1.1 Method of Connecting and Disconnecting Coupling Assembly: The coupling assembly shall be designed such that they can be manually connected or disconnected throughout the applicable temperature range for the coupling type and class when subjected to the following line pressures:

- a. 60 pounds per square in (psi) for couplings applicable to 0.250 in through 1.000 in outside diameter (OD) tubing
- b. 20 psi for couplings applicable to 1.250 in through 2.000 in OD tubing except that these shall be capable of disconnection at 60 psi.

3.2.1.2 Locking: Devices shall be provided for positively locking connected couplings and means incorporated for visually and physically verifying the locked condition.

3.2.1.3 Overhaul: The couplings shall be designed to permit overhaul or repair without the use of special tools or fixtures.

3.2.1.4 Interchangeability: All coupling halves having the same manufacturer's part number shall be functionally and dimensionally interchangeable.

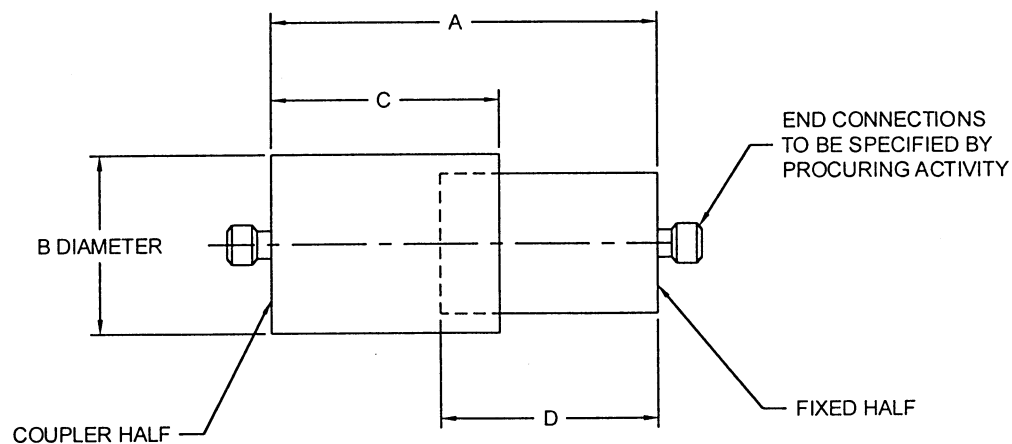


FIGURE 1 - Maximum Envelope Dimensions

TABLE 1 - Maximum Envelope Dimensions, Weights, Spillage, Rated Flow, and Pressure Drops

Tube Size (in)	Maximum Envelope Dimension A (in)	Maximum Envelope Dimension B (in)	Maximum Envelope Dimension C (in)	Maximum Envelope Dimension D (in)	lb/Coupled Max	Fluid Loss During Disconnection Max (cm ³)	Rated Flow (GPM)	Pressure Drop (psi)
0.250	3.900	1.800	2.300	2.200	0.8	2.5	1.2	4.5
0.375	3.900	1.800	2.300	2.200	0.8	3.0	3.5	5.0
0.500	3.900	1.800	2.300	2.200	0.8	4.0	6.0	5.5
0.625	4.600	2.800	3.200	2.800	1.3	9.0	10.5	6.0
0.750	4.600	2.800	3.200	2.800	1.3	15.0	16.0	7.0
1.000	4.600	2.800	4.300	2.800	1.8	35.0	29.0	8.0
1.250	5.700	3.500	4.300	3.800	2.8	45.0	45.0	10.0
1.500	5.700	3.500	4.300	3.800	3.5	60.0	70.0	15.0
2.000	6.400	4.000	4.300	3.800	4.0	90.0	125.0	15.0

TABLE 2 - Pressure Rating Pressure - psi

Type	Class	Fluid	Operating	Proof	Burst
I	A, B, C	Fuel	60	120	240
II	A	Oil	120	240	360
II	B	Oil	120	240	360
II	C	Oil	120	240	360