



AEROSPACE STANDARD	AS25427	
	Issued Reaffirmed	2004-04 2015-07
Coupling Assembly, Hydraulic, Self-Sealing, Quick Disconnect FSC 4730		

RATIONALE

AS25427 has been reaffirmed to comply with the SAE five-year review policy.

NOTICE

This document has been taken directly from U.S. Military Specification MIL-C-25427A, Amendment 1 and contains only minor editorial and format changes required to bring it into conformance with the publishing requirements of SAE Technical Standards. The initial release of this document is intended to replace MIL-C-25427A, Amendment 1. Any part numbers established by the original specification remain unchanged.

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Documents

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1. SCOPE:

1.1 Scope:

This specification covers the detail requirements for aircraft hydraulic self-sealing quick disconnect couplings, for use in types I and II hydraulic systems (-65°F to +275°F temperature range) as defined by Specification MIL-H-5440.

1.2 Classification:

Hydraulic self-sealing, quick disconnect couplings shall be one of the following classes, as specified (see 6.2):

Class 600—600-pounds per square inch (PSI) rated pressure furnished only in 1-1/4 inch tube size.

Class 3000—3,000-PSI rated pressure furnished only in 1/4-, 3/8-, 1/2-, 5/8-, 3/4-, and 1-inch sizes.

2. APPLICABLE DOCUMENTS:

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

SPECIFICATIONS

MILITARY

MIL-E-5272	Environmental Testing, Aeronautical and Associated Equipment, General Specification for.
MIL-H-5440	Hydraulic Systems: Design, Installation and Test of Aircraft, (General Specification for).
MIL-F-5509	Fittings; Fluid Connections.
MIL-H-5606	Hydraulic Fluid, Petroleum Base, Aircraft and Ordnance.
MIL-H-8775	Hydraulic Systems Components, Aircraft, General Specification for.
MIL-F-18280	Fittings, Flareless, Fluid Connection.

2.1 (Continued):

STANDARDS

MILITARY

MIL-STD-130	Identification Marking of U. S. Military Property.
MS24333	Coupling Assembly, Hydraulic, Self-Sealing, Quick Disconnect, Flared Fitting to Internal Thread Boss.
MS24334	Coupling Assembly, Hydraulic, Self-Sealing, Flareless Fitting to Internal Thread Boss.
MS24335	Flange, Bulkhead Mounting, Hydraulic, Self-Sealing Coupling.
MS28774	Retainer, Packing Backup, Single Turn, Tetrafluoroethylene.
MS28775	Packing, Preformed, Hydraulic, +275°F, ("O" Ring).
MS28782	Retainer, Packing, Back-Up, Teflon.
MS28783	Ring, Gasket, Back-Up, Teflon.

AIR FORCE-NAVY AERONAUTICAL

AND10064	Fittings, Installation of Flared Tube, Straight Threaded Connectors.
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(Copies of specifications, standards, drawings, and publications required by contractors in connection with specific procurement functions should be obtained from the procuring activity or as directed by the contracting officer.)

3. REQUIREMENTS:

3.1 Qualification:

The couplings furnished under this specification shall be a product which has been tested, and has passed the qualification tests specified herein, and has been listed on or approved for listing on the applicable Qualified Products List.

3.2 General specification:

The requirements of Specification MIL-H-8775 apply as requirements of this specification, with the exceptions and additions specified herein. When the two specifications conflict, this specification shall govern.

3.3 Materials:

The coupling shall be constructed of materials that will not change the composition of or be adversely affected by hydraulic fluid conforming to Specification MIL-H-5606. (See 4.5.2.)

3.4 Design and construction:

The configuration, dimensions, and other details of design of the couplings shall conform to the applicable MS standard. Coupling nuts, or other coupling devices, shall be a part of the hose attaching coupling-half assembly. When coupled, the coupling shall be such that it will permit fluid flow in either direction in accordance with the rated flow and pressure drop as specified in table I. Flow shall not be blocked under surge conditions.

TABLE I. Rated flow and pressure drop

Dash No.	Equivalent tube size	Rate flow GPM	Pressure drop PSI (max)
—4	1/4	1.2	8
—6	3/8	3.5	8
—8	1/2	6.0	8
—10	5/8	10.5	8
—12	3/4	16.0	8
—16	1	29.0	8
—20	1-1/4	45.0	8

3.4.1 Temperature range: Couplings shall be designed to operate throughout the temperature range of -65°F to +275°F. (See 4.6.1.)

3.4.2 Sealing and fluid loss: The couplings shall, when uncoupled, seal the ends of the disconnected lines at the point of disconnection and shall not permit external leakage during any phase of coupling or uncoupling. Fluid loss is specified in table II is not considered to be external leakage. Both halves of the coupling shall seal fluid under both low and high pressures when tested as specified in 4.6.3.

3.4.3 Seals: Only Standard MS28775 O-ring packings, and Standards MS28774, MS28782, and MS28788 Teflon backup rings shall be used.

- 3.4.4 Air inclusion: Air inclusion, as determined by calculation of volume of air that may be displaced to the inside of the coupling during the coupling operation, shall not exceed the values specified in table II when tested as specified in 4.6.10.

TABLE II. Air inclusion and fluid loss

Dash No.	Equivalent tube size	Air inclusion cubic inches (max)	Average fluid loss per operating cycle cubic centimeter (max)
—4	1/4	0.05	0.50
—6	3/8	0.12	1.30
—8	1/2	0.20	2.20
—10	5/8	0.50	5.80
—12	3/4	0.70	8.20
—16	1	0.90	9.00
—20	1-1/4	1.20	11.80

- 3.4.5 Operation: The coupling shall be so designed that it can be coupled and uncoupled with one hand without the use of tools. Coupling and uncoupling operations shall be possible with 60-PSI static pressure applied to both halves of the coupling. Inadvertent uncoupling shall not occur under 20G maximum loading. It shall be possible to determine by visual inspection that the coupling is completely coupled and locked. In addition, couplings shall provide a touch indication for determining whether the coupling is locked or unlocked. Couplings shall not have any partially coupled unlocked positions in which the coupling can remain stable and permit fluid flow. Couplings shall be coupled with a single simple motion. (See 4.6.9.)
- 3.4.6 Flange: A removable bulkhead flange for fastening the coupling to a bulkhead shall be provided, as required by the MS standard, for use on the bulkhead mounting end of the coupling. The flange shall be in accordance with Standard MS24335. This flange shall withstand 1.5 times the maximum steel tubing wrench torque as specified by Standard AND10064 for a given tube size coupling when tested as specified in 4.6.13.

3.5 Interchangeability:

Couplings shall be interchangeable as an assembly. It shall be impossible to interconnect different tube sizes.

3.6 Performance:

The self-sealing couplings furnished under this specification shall perform satisfactorily when subjected to the tests specified in section 4 headed as follows:

(a) Examination of product (See Specification MIL-H-8775).

(b) Extreme temperature functioning (4.6.1).

(c) Proof pressure (4.6.2)

(d) Leakage (4.6.3)

(e) Pressure drop (4.6.4)

(f) Vacuum (4.6.5)

(g) Surge flow (4.6.6)

(h) Impulse and vibration (4.6.7)

(i) Endurance (4.6.8)

(j) Manual operation (4.6.9)

(k) Air inclusion (4.6.10)

(l) Impact (4.6.11)

(m) Burst pressure (4.6.12)

(n) Flange strength (4.6.13)

3.7 Color:

The tube connection ends of the coupling shall be colored in accordance with Specification MIL-F-5509 and MIL-F-18280, as applicable. The uncoupling device shall be colored orange.