

RATIONALE

Subsequent to the cancellation of MIL-F-5006, Quantity Measuring Fuse-Hydraulic, the SAE committee membership determined there was a need for a replacement specification which is presented below.

AS5466 has been reaffirmed to comply with the SAE Five-Year Review policy.

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1. SCOPE

This specification establishes the design, performance, and test requirements for hydraulic quantity measuring fuses intended to be used for hydraulic circuit protection.

1.1 Product Classification

1.1.1 Types

Type 1 - Self-Resetting without manual bypass

Type 2 - Self-Resetting with manual bypass

Type 3 - Non Self-Resetting

1.1.2 Classes

Class 1500 - 1500 psi (10.3 MPa) nominal system pressure

Class 3000 - 3000 psi (20.7 MPa) nominal system pressure

Class 4000 - 4000 psi (27.6 MPa) nominal system pressure

Class 5000 - 5000 psi (34.5 MPa) nominal system pressure

Class 8000 - 8000 psi (55.2 MPa) nominal system pressure

1.1.3 Volumetric Capacity Rating

Refer to Figure 1 and Table 1 (see 3.2.2.2).

If a different volumetric capacity than listed is desired the procuring agency shall have the option of specifying unique parameters.

1.2 Envelope and Port Configuration

The procuring agency shall specify the envelope and port configuration.

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

AS1241 Fire Resistant Phosphate Ester Hydraulic Fluid for Aircraft

ARP1383 Impulse Testing of Aerospace Hydraulic Actuators, Valves, Pressure Containers, and Similar Fluid System Components

ARP4386 Terminology and Definitions for Aerospace Fluid Power, Actuation and Control Technologies

AS4716 Gland Design, O-ring and Other Elastomeric Seals

AS4941	Aerospace - General Requirements for Commercial Aircraft Hydraulic Components
AS5857	Gland Design, O-ring and Other Elastomeric Seals, Static Applications
AS8775	Hydraulic System Components, Aircraft and Missiles, General Specification For

2.1.2 U.S. Government Publications

Available from the Document Automation and Production Service (DAPS), Building 4/D, 700 Robbins Avenue, Philadelphia, PA 19111-5094, Tel: 215-697-6257, <http://assist.daps.dla.mil/quicksearch/>.

MIL-PRF-5606	Hydraulic Fluid, Petroleum Base, Aircraft and Ordnance
MIL-PRF-83282	Hydraulic Fluid, Fire Resistant; Synthetic Hydrocarbon Base, Aircraft and Missile
MIL-PRF-87257	Hydraulic Fluid, Fire Resistant; Low Temperature Synthetic Hydrocarbon Base, Aircraft and Missile
MIL-STD-130	Identification Marking of U.S. Military Property
MIL-STD-810	Environmental Test Methods and Engineering Guidelines

2.1.3 Other Documents

Available from RTCA Secretariat, 44 Suite 500, 1425 K Street, NW, Washington, DC 20005, Tel: 202-833-9339, www.rtca.org.

RTCA/DO-160	Environmental Conditions and Test Procedures for Airborne Equipment
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2.2 Definitions

QUANTITY MEASURING HYDRAULIC FUSE: A Quantity Measuring Hydraulic Fuse is a hydraulic component that will only permit up to a defined quantity of fluid through it in a single operation. If this defined quantity of fluid passes through the fuse, it will close, thereby isolating the pipeline downstream of it. NOTE: Quantity measuring hydraulic fuses are sometimes referred to as Volumetric Fuses.

VOLUMETRIC CAPACITY: The volumetric capacity of the fuse is the maximum quantity of fluid through it in a single operation passing through the fuse before it closes.

RESETTING: This is the means of opening the fuse after it has closed to permit the fuse to be used again. Resetting can be either automatic (self-resetting) or manual via a mechanical lever.

NORMAL OPERATION: The normal operation of the fuse occurs when fluid passes through the fuse at flow rate “D” of Figure 1 (see 3.2.2.2) and then stop flowing for a minimum of 5 s when 70% of volume “H” in Figure 1 has passed through the fuse.

FULL FUSING CYCLE: A full fusing cycle occurs when fluid passes through the fuse at a flow rate between “B” and “E” of Figure 1 (see 3.2.2.2) until the fuse shuts off the flow. Then allowing the fuse to reset by either reducing the delta pressure to zero (Types 1 and 2 only) or passing fluid through the fuse in the reverse direction.

PARTIAL FUSING CYCLE: A partial fusing cycle occurs when 60 to 80% of volume “H” in Figure 1 (see 3.2.2.2) passes through the fuse at a flow rate between “C” and “D” in Figure 1. Then allowing the fuse to reset by either stopping flow for a minimum of 5 s (Types 1 and 2 only) or passing fluid through the fuse in the reverse direction.

For other definitions and terms refer to ARP4386.

3. REQUIREMENTS

3.1 General Design Requirements

3.1.1 Standard Hydraulic Component Requirements

The fuse shall meet the requirements of AS4941 for commercial applications or AS8775 for military applications.

3.1.2 Hydraulic Fluid

The applicable standard for the hydraulic fluid, for example, AS1241, MIL-PRF-5606, MIL-PRF-83282, or MIL-PRF-87257 shall be specified by the procuring agency.

3.1.3 Identification and Marking

3.1.3.1 Identification

The identification requirements for the fuse shall be in accordance with AS4941 or AS8775 as applicable.

3.1.3.2 Marking and Serialization

Each fuse shall be marked and serialized in accordance with AS4941 or AS8775 as applicable.

3.1.3.3 Flow Direction Marking

An arrow shall be clearly and permanently marked on the unit to indicate the direction of fusing flow. Impression stamping is not allowed.

3.2 Specific Design Requirements

3.2.1 Functional

- a. The unit shall measure fluid volume within a flow range and block the outlet flow if the volume reaches the specified “fusing” volume.
- b. The type of fuse shall be per 1.1.1 as specified by the procuring agency.

3.2.2 Performance

3.2.2.1 System Pressure

The system pressure shall be per 1.1.2 as specified by the procuring agency.

3.2.2.2 Volumetric Capacity

The volumetric capacity of the unit shall be per Figure 1 and Table 1 as specified by the procuring agency for all pressures and environmental conditions specified in 3.2.5. The volumetric capacity shall not be affected by hydraulic line size or plumbing configuration.