

 AEROSPACE STANDARD	SAE AS6026	REV. A
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Control Unit, Pressure Generating, Manually Operated, Aircraft Hydraulic Brake System		
FSC 1680		

RATIONALE

This AS was voted to be stabilized at the May 2013 meeting. Several of the reference documents have been superseded or canceled. For example, MIL-H-5440 has been superseded by AS5440 for military applications and ARP4752 for commercial applications. Also, MIL-H-8775 has been superseded by AS8775 for military applications and AS4941 for commercial aircraft.

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1. SCOPE:

- 1.1 This specification covers manual pressure-generating brake control units as defined by Specification MIL-H-5440.

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 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 U.S. Government Publications:

Available from DODSSP, Subscription Services Desk, Building 4D, 700 Robbins Avenue, Philadelphia, PA 19111-5094.

MIL-H-5440	Hydraulic Systems: Design, Installation and Tests of Aircraft (General Specification for)
MIL-P-5517	Plastic Parts in Aircraft Hydraulic Equipment; General Tests for
MIL-H-5606	Hydraulic Fluid, Petroleum Base, Aircraft and Ordnance
MIL-B-8584	Brake Systems, Wheel, Aircraft, Design of
MIL-A-8625	Anodic Coatings, for Aluminum and Aluminum Alloys
MIL-A-8629	Airplane Strength and Rigidity
MIL-H-8775	Hydraulic System Components, Aircraft, General Specification for
MIL-STD-105	Sampling Procedures and Tables for Inspection by Attributes
MIL-STD-129	Marking for Shipment and Storage

3. REQUIREMENTS:

3.1 Preproduction Sample:

Prior to beginning quantity production, preproduction samples shall be subjected to preproduction testing. The preproduction sample shall be produced by the same method and of the same material that will be used for quantity production of the item.

3.2 General:

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

3.3 Design and Construction:

Design of control units for manually operated hydraulic brake systems shall consist of a mechanically actuated hydraulic power generator. The incorporation into the unit of a reservoir to maintain a reserve supply of fluid shall be optional. This unit shall be operable by the pilot's brake pedal, and it shall conform to the applicable requirements of Specification MIL-B-8584.

3.3.1 Operation Temperatures: The control units shall be designed and constructed for operation at temperatures of from -54 to 71 °C (-65 to 160 °F).

3.3.2 Operating Pressure: Normal operating pressure shall be that pressure required to lock the wheels of the airplane, assuming a coefficient of friction of 0.31 between the tires and the ground. Maximum operating pressure shall be that pressure required to lock the wheels of the airplane, assuming a static coefficient of friction of 0.55 between the tires and the ground.

3.3.3 Pumping: Control units shall be designed to permit "pumping up" of the hydraulic pressure in a brake system where the control unit travel to operate the brake may become greater than the travel normally required, such as in the case of a failed packing in the unit, or a leak in the brake system. It shall also serve to facilitate bleeding of air from the brake system and maintaining an airfree system. The pumping valve shall remain sealed at all times during the operating stroke of the unit, but shall be designed to open immediately at any time when the brake line hydraulic pressure may become appreciably less than the reservoir pressure. Pressure drop through the valve during pumping shall be sufficiently low to assure compliance with the pumping test specified in 4.8.3.

- 3.3.3.1 Return Mechanism: A means shall be provided within the unit to return the pressure generator to its relaxed position upon release of the actuating force. The return rate shall be sufficiently rapid to provide a pressure drop in the unit enough greater than that in the brake system to assure a buildup to the required pressure within the required number of pumping strokes when tested as specified in 4.8.3.
- 3.3.4 Bleeding: Provisions shall be made in the design of the control unit in order that the pumping valve is mechanically unseated and remains open when the unit is in the relaxed position with no mechanical force applied.
- 3.3.5 Structural Strength: The structural strength of the control units shall be such that no part of the unit or its mounting shall give evidence of failure under the maximum imposed mechanical operating loads, or wrench torque loads required for making connections. Operating load strengths shall be as specified in Specification MIL-A-8629.

3.4 Performance:

The control unit shall satisfy the performance requirements specified in Section 4 when subjected to the following tests:

- a. Immersion (4.8.2).
- b. Pumping (4.8.3).
- c. Elevated temperature cycling (4.8.4).
- d. Cold temperature cycling (4.8.5).
- e. Life (4.8.6).
- f. Proof pressure and leakage (4.8.7).
- g. Efficiency (4.8.7.3).
- h. Burst pressure (4.8.8).

3.5 Marking:

All ports for tube connections shall be clearly and permanently marked to indicate the proper connections to be made.