

# Federal Aviation Regulation

**This Section of FAR is No Longer Current.**

## ▼ Sec. 25.1435

Part 25 AIRWORTHINESS STANDARDS: TRANSPORT CATEGORY AIRPLANES	
Subpart F--Equipment	Miscellaneous Equipment

### Sec. 25.1435

Hydraulic systems.

[(a) *Design.* Each hydraulic system must be designed as follows:

- (1) Each element of the hydraulic system must be designed to withstand the design operating pressure loads in combination with limit structural loads which may be imposed without deformation that would prevent it from performing its intended function, and to withstand, without rupture, the design operating pressure loads multiplied by a factor of 1.5 in combination with ultimate structural loads that can reasonably occur simultaneously. Design operating pressure is maximum normal operating pressure, excluding transient pressure.
- (2) There must be a means provided at a flight crewmember station to indicate the pressure in each continuously operating system.
- (3) There must be a means provided at a flight crewmember station to indicate the quantity of fluid in each continuously operating system.
- (4) There must be means to ensure that the pressure, including transient (surge) pressure, in any part of the systems will not exceed safe limit above design operating pressure and to prevent excessive pressures resulting from fluid volumetric changes in all lines which are likely to remain closed long enough for such changes to occur.
- (5) Each hydraulic element must be installed and supported to prevent excessive vibration, abrasion, corrosion, and mechanical damage, and to withstand inertia loads. If a hydraulic fluid which could be harmful to occupants when liberated in any form is used, there must be a means to prevent harmful or hazardous concentration of the fluid or vapors in the crew or passenger compartments during flight.
- (6) Means for providing flexibility must be used to connect points in a hydraulic fluid line between which relative motion or differential vibration exists.

(b) *Tests.*

- (1) A complete hydraulic system must be static tested to show that it can withstand a pressure of 1.5 times the design operating pressure without a deformation of any part of the system that would prevent it from performing its intended function. Clearance between structural members and hydraulic system elements must be adequate and there must be no permanent detrimental deformation. For the purpose of this test, the pressure relief valve may be made inoperable to permit application of the required pressure.
- (2) Compliance with Sec. 25.1309 for hydraulic systems must be shown by functional tests, endurance tests, and analysis. The entire system or appropriate subsystems must be

tested in an airplane or in a mockup installation to determine proper performance and proper relation to other aircraft systems. The functional tests must include simulation of hydraulic system failure conditions. The tests must account for flight loads, ground loads, and hydraulic system design operating and transient pressures expected during normal operation, but need not account for vibration loads or for loads due to temperature effects. Endurance tests must simulate the repeated complete flights that could be expected to occur in service. Elements which fail during the tests must be modified in order to have the design deficiency corrected and, where necessary, must be sufficiently retested. Simulation of operating and environmental conditions must be completed on elements and appropriate portions of the hydraulic system to the extent necessary to evaluate the environmental effects.

(c) *Fire protection.* Each hydraulic system using flammable hydraulic fluid must meet the applicable requirements of Secs. 25.863, 25.1183, 25.1185, and 25.1189.]

Amdt. 25-13, Eff. 7/27/67

#### ▶ **Comments**

#### ▼ **Document History**

##### **Notice of Proposed Rulemaking Actions:**

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##### **Final Rule Actions:**

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