

**[4910-13]**

**DEPARTMENT OF TRANSPORTATION**

**Federal Aviation Administration**

**14 CFR Part 25**

**[Docket No. NM420; Special Conditions No. 25-406-SC]**

**Special Conditions:** Dassault Aviation Falcon Model 2000EX; Autobraking System.

**AGENCY:** Federal Aviation Administration (FAA), DOT.

**ACTION:** Final special conditions.

**SUMMARY:** These special conditions are issued for the Dassault Aviation Falcon Model 2000EX airplane. This airplane will have a novel or unusual design feature(s) associated with the autobraking system for use during landing. The applicable airworthiness regulations do not contain adequate or appropriate safety standards for this design feature. These special conditions contain the additional safety standards that the Administrator considers necessary to establish a level of safety equivalent to that established by the existing airworthiness standards.

**EFFECTIVE DATE:** June 18, 2010.

**FOR FURTHER INFORMATION CONTACT:** Todd Martin, FAA, Airframe/Cabin Safety, ANM-115, Transport Airplane Directorate, Aircraft Certification Service, 1601 Lind Avenue SW., Renton, Washington, 98057-3356; telephone (425) 227-1178; facsimile (425) 227-1149.

**SUPPLEMENTARY INFORMATION:**

**Background**

On July 1, 2008, Dassault Aviation applied for a change to Type Certificate (TC) No. A50NM to install an automatic braking system on the Falcon Model 2000EX airplane. This is a pilot-selectable function that allows earlier maximum braking at landing without pilot pedal

input. When the autobrake system is armed before landing, it automatically commands maximum braking at main wheels touchdown. Normal procedures remain unchanged and call for manual braking after nose wheel touchdown.

The current Federal Aviation Regulations do not contain adequate requirements to address the potentially higher structural loads that could result from this type of automatic braking system. Title 14, Code of Federal Regulations (14 CFR) 25.471 through 25.511 address ground handling loads, but do not contain a specific “pitchover” requirement addressing the loading on the nose gear, the nose gear surrounding structure, and the forward fuselage. The Dassault autobraking system, which applies maximum braking at the main wheels before the nose gear touches down, will cause a high nose gear sink rate, and potentially higher gear and airframe loads. Therefore, the FAA has determined that a special condition is needed. The special condition requires that the airplane be designed to withstand the loads resulting from maximum braking, taking into account the effects of the automatic braking system.

### **Type Certification Basis**

Under the provisions of 14 CFR 21.101, Dassault Aviation must show that the Falcon Model 2000EX, as changed, continues to meet the applicable provisions of the regulations incorporated by reference in TC No. A50NM or the applicable regulations in effect on the date of application for the change. The regulations incorporated by reference in the type certificate are commonly referred to as the “original type certification basis.” The regulations incorporated by reference in TC No. A50NM are as follows: Part 25 of 14 CFR as amended by Amendments 25-1 through 25-69. In addition, Dassault Aviation has elected to comply with the following amendments:

- Amendment 25-71 for § 25.365(e)
- Amendment 25-72 for §§ 25.783(g) and 25.177,
- Amendment 25-75 for § 25.729(e)
- Amendment 25-79 for § 25.811(e)(2)
- Amendment 25-80 for § 25.1316

In addition, the certification basis includes certain special conditions, exemptions, or later amended sections of the applicable part that are not relevant to this proposed special condition.

If the Administrator finds that the applicable airworthiness regulations (i.e., part 25) do not contain adequate or appropriate safety standards for the Falcon Model 2000EX because of a novel or unusual design feature, special conditions are prescribed under the provisions of § 21.16.

In addition to the applicable airworthiness regulations and special conditions, the Falcon Model 2000EX must comply with the fuel-vent and exhaust-emission requirements of 14 CFR part 34 and the noise certification requirements of 14 CFR part 36.

The FAA issues special conditions, as defined in 14 CFR 11.19, in accordance with § 11.38, and they become part of the type-certification basis under § 21.101.

Special conditions are initially applicable to the model for which they are issued. Should the type certificate for that model be amended later to include any other model that incorporates the same novel or unusual design feature, or should any other model already included on the same type certificate be modified to incorporate the same novel or unusual design feature, the special conditions would also apply to the other model under § 21.101.

### **Novel or Unusual Design Features**

The Falcon Model 2000EX will incorporate the following novel or unusual design features:

The airplane will be equipped with an automatic braking system, which is a pilot-selectable function that allows earlier maximum braking at landing without pilot pedal input. When the autobrake system is armed before landing, it automatically commands maximum braking at main wheels touchdown. This will cause a high nose gear sink rate, and potentially higher gear and airframe loads than would occur with a traditional braking system. Therefore, the FAA has determined that a special condition is needed.

### **Discussion**

The special condition defines a landing pitchover condition that takes into account the effects of the automatic braking system. The special condition defines the airplane configuration, speeds, and other parameters necessary to develop airframe and nose gear loads for this condition. The special condition requires that the airplane be designed to support the resulting limit and ultimate loads as defined in § 25.305.

### **Discussion of Comments**

Notice of proposed special conditions No. 25-09-13-SC for the Dassault Aviation Falcon Model 2000EX airplanes was published in the Federal Register on December 10, 2009. No comments were received, and the special conditions are adopted as proposed.

### **Applicability**

As discussed above, these special conditions are applicable to the Falcon Model 2000EX. Should Dassault Aviation apply at a later date for a change to the type certificate to include

another model on the same type certificate incorporating the same novel or unusual design feature, the special conditions would apply to that model as well.

## **Conclusion**

This action affects only certain novel or unusual design features on one model of airplanes. It is not a rule of general applicability.

## **List of Subjects in 14 CFR Part 25**

Aircraft, Aviation safety, Reporting and recordkeeping requirements.

The authority citation for these special conditions is as follows:

Authority: 49 U.S.C. 106(g), 40113, 44701, 44702, 44704.

## **The Special Conditions**

Accordingly, pursuant to the authority delegated to me by the Administrator, the following special conditions are issued as part of the type certification basis for Dassault Aviation Falcon Model 2000EX airplanes.

### **Landing Pitchover Condition**

A landing pitchover condition must be addressed that takes into account the effect of the autobrake system. The airplane is assumed to be at the design maximum landing weight, or at the maximum weight allowed with the autobrake system on. The airplane is assumed to land in a tail-down attitude and at the speeds defined in § 25.481. Following main gear contact, the airplane is assumed to rotate about the main gear wheels at the highest pitch rate allowed by the autobrake system. This is considered a limit load condition from which ultimate loads must also be determined. Loads must be determined for critical fuel and payload distributions and centers

of gravity. Nose gear loads, as well as airframe loads, must be determined. The airplane must support these loads as described in § 25.305.

Issued in Renton, Washington, on May 12, 2010.

/s/

Ali Bahrami  
Manager, Transport Airplane Directorate  
Aircraft Certification Service