SUBPART C- STRUCTURE

General

JAR23.301 Loads

(a) Strength requirements are specified in terms of limit loads (the maximum loads to be expected in service) and ultimate loads (limit loads multiplied by prescribed factors of safety). Unless otherwise provided, prescribed loads are limit loads.

(b) Unless otherwise provided, the air, ground and water loads must be placed in equilibrium with inertia forces, considering each item of mass in the aeroplane. These loads must be distributed to conservatively approximate or closely represent actual conditions. Methods used to determine load intensities and distribution on canard and tandem wing configurations must be validated by flight test measurement unless the methods used for determining those loading conditions are shown to be reliable or conservative on the configuration under consideration.

(c) If deflections under load would significantly change the distribution of external or internal loads, this redistribution must be taken into account.

(d) Simplified structural design criteria may be used if they result in design loads not less than those prescribed in JAR 23.331 to 23.521. For conventional, single reciprocating engine (aeroplanes of 2 721 kg (6 000 lb) or less maximum take-off weight), the design criteria of AppendixA of JAR-23 are an approved equivalent of JAR 23.321 to 23.459. If Appendix A is used, the entire Appendix must be substituted for the corresponding sections of this JAR-23.
[Arndt. 1, 01.02.01]

JAR23.302 Canard or tandem wing configurations

The forward structure of a canard or tandem wing configuration must -

(a) Meet all requirements of subpart C and subpart D of JAR-23 applicable to a wing; and

(b) Meet all requirements applicable to the function performed by these surfaces.

JAR 23.303 Factor of safety

Unless otherwise provided, a factor of safety of 1.5 must be used.

JAR 23.305 Strength and deformation

(a) The structure must be able to support limit loads without detrimental, permanent deformation. At any load up to limit loads, the deformation may not interfere with safe operation.

(b) The structure must be able to support ultimate loads without failure for at least three seconds, except local failures or structural instabilities between limit and ultimate load are acceptable only if the structure can sustain the required ultimate load for at least three seconds. However, when proof of strength is shown by dynamic tests simulating actual load conditions, the three second limit does not apply.

JAR 23.307 Proof of structure

[(See ACJ 23.307)]

(a) Compliance with the strength and deformation requirements of JAR 23.305 must be shown for each critical load condition. Structural analysis may be used only if the structure conforms to those for which experience has shown this method to be reliable. In other cases, substantiating load tests must be made. Dynamic tests, including structural flight tests, are acceptable if the design load conditions have been simulated.

(b) Certain parts of the structure must be tested as specified in Subpart D of JAR-23.
[Amdt. 1, 01.02.01]