§ 23.929 Engine installation ice protection.

Propellers (except wooden propellers) and other components of complete engine installations must be protected against the accumulation of ice as necessary to enable satisfactory functioning without appreciable loss of thrust when operated in the icing conditions for which certification is requested.

§ 23.933 Reversing systems.

(a) For turbojet and turbofan reversing systems. (1) Each system intended for ground operation only must be designed so that, during any reversal in flight, the engine will produce no more than flight idle thrust. In addition, it must be shown by analysis or test, or both, that—

(i) Each operable reverser can be restored to the forward thrust position; or

(ii) The airplane is capable of continued safe flight and landing under any possible position of the thrust reverser.

(2) Each system intended for in-flight use must be designed so that no unsafe condition will result during normal operation of the system, or from any failure, or likely combination of failures, of the reversing system under any operating condition including ground operation. Failure of structural elements need not be considered if the probability of this type of failure is extremely remote.

(b) For propeller reversing systems. (1) Each system must be designed so that no single failure, likely combination of failures or malfunction of the system result in unwanted reverse thrust under any operating condition. Failure of structural elements need not be considered if the probability of this type of failure is extremely remote.

(2) Compliance with paragraph (b)(1) of this section must be shown by failure analysis, or testing, or both, for propeller systems that allow the propeller blades to move from the flight low-pitch position to a position that is substantially less than the normal flight, low-pitch position. The analysis may include or be supported by the analysis made to show compliance with §35.21 for the type certification of the propeller and associated installation components. Credit will be given for pertinent analysis and testing completed by the engine and propeller manufacturers.

§ 23.934 Turbojet and turbofan engine thrust reverser systems tests.

Thrust reverser systems of turbojet or turbofan engines must meet the requirements of §33.97 of this chapter or it must be demonstrated by tests that engine operation and vibratory levels are not affected.