



CONDIÇÃO ESPECIAL

CE/SC nº 23 – 006

Título: **Condição Especial Aplicável à Integridade do Vaso de Pressão e ao Sistema de Pressurização**
Title: **Special Condition for Pressure Vessel Integrity and Pressurization System**

Aprovação: Resolução nº 124, de 1º de dezembro de 2009, publicada no Diário Oficial da União, Nº 230, S/1, p. 35, de 2/12/2009 **Origem:** SAR

APLICABILIDADE

Esta condição especial se aplica à integridade do vaso de pressão e ao sistema de pressurização do avião Embraer EMB-505.

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Esta condição especial complementa as seções 23.365, 23.573, 23.574, e 23.841, do RBHA 23, emenda 23-55.

“§ SC 23-006 Special Condition for Pressure Vessel Integrity and Pressurization System.

SC RBHA 23. 571 Pressure Vessel Integrity.

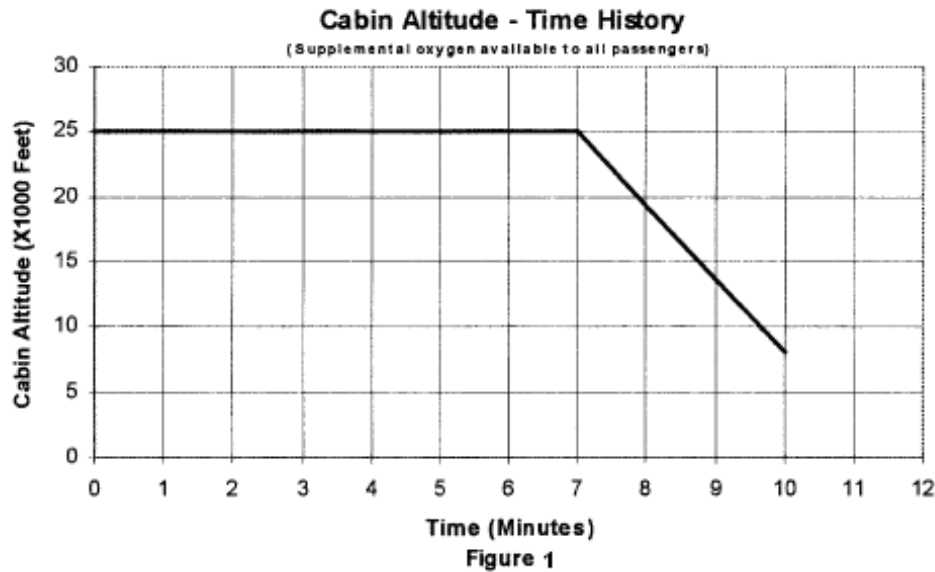
In addition to the current RBHA Part 23.365, 23.573, 23.574, Embraer needs to take into account the pressure vessel integrity by the following:

- 1) The maximum extent of failure and pressure vessel opening that can be demonstrated to comply with Special Condition SC § RBHA 23.841 must be determined. It must be demonstrated by crack propagation and damage tolerance analysis supported by testing that a larger opening (visually detectable) or a more severe failure than demonstrated will not occur in normal operations.
- 2) Inspections schedules and procedures must be established to ensure that cracks and normal fuselage leak rates will not deteriorate to the extent that an unsafe condition could exist during normal operation.

SC RBHA 23.841 Pressurized cabins

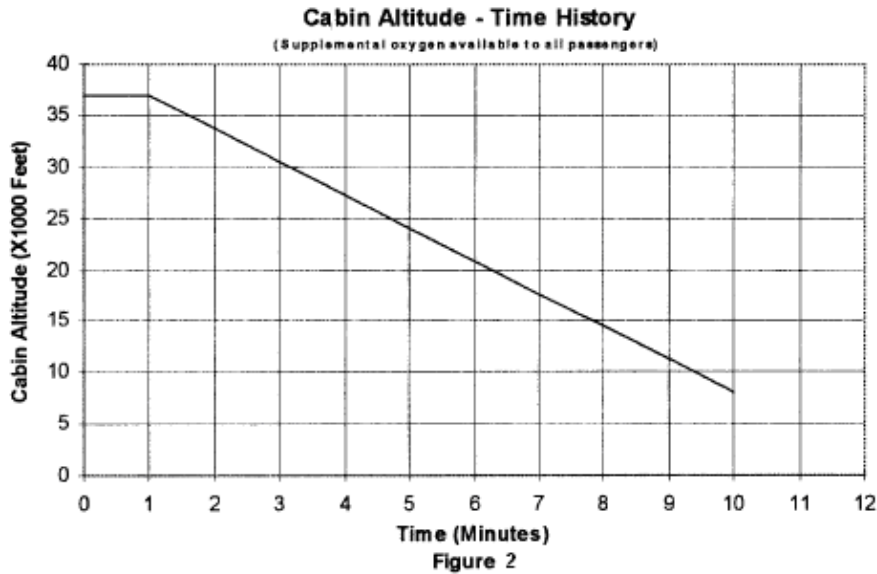
In addition to the current 23.841 ANAC imposes the application of the following set of requirements:

- (a) The pressurization system, which includes for this purpose bleed air, air conditioning, and pressure control systems, must prevent the cabin altitude from exceeding the cabin altitude-time history shown in Figure 1 after each of the following:



NOTE: For figure 1, time starts at the moment cabin altitude exceed 8 000 feet during depressurization. If depressurization analysis shows that the cabin altitude limit of this curve is exceeded, the following alternate limitations apply: After depressurization the maximum cabin altitude exceedence is limited 30 000 feet. The maximum time the cabin altitude may exceed 25 000 feet is 2 minutes; time starting when the cabin altitude exceeds 25 000 feet and ending when returns to 25 000 feet.

- (1) Any probable malfunction or failure of the pressurization system, in conjunction with any undetected, latent malfunctions or failures, must be considered.
- (2) Any single failure in the pressurization system combined with the occurrence of a leak produced by a complete loss of a door seal element, or a fuselage leak through an opening having an effective area 2.0 times the effective area which produces the maximum permissible fuselage leak rate approved for normal operation, whichever produces a more severe leak.
- (b) The cabin altitude-time history may not exceed that shown in Figure 2 after each of the following:
 - (1) The maximum pressure vessel opening resulting from an initially detectable crack propagating for a period encompassing four normal inspection intervals. Mid-panel cracks and cracks through skin-stringer and skin-frame combinations must be considered.
 - (2) The pressure vessel opening or duct failure resulting from probable damage (failure effect) while under maximum operating cabin pressure differential due to a tire burst, engine rotor burst, loss of antennas or stall warning vanes, or any probable equipment failure (bleed air, pressure control, air-conditioning, electrical source(s), etc.) that affects pressurization.
 - (3) Complete loss of thrust from all engines.



NOTE: For figure 2, time starts at the moment cabin altitude exceed 8 000 feet during de-pressurization. If depressurization analysis shows that the cabin altitude limit of this curve is exceeded, the following alternate limitations apply: After depressurization the maximum cabin altitude exceedence is limited 40 000 feet. The maximum time the cabin altitude may exceed 25 000 feet is 2 minutes; time starting when the cabin altitude exceeds 25 000 feet and ending when returns to 25 000 feet.

(c) In showing compliance with paragraphs (a) and (b) of these special conditions (Pressurization), it may be assumed that an emergency descent is made by an approved emergency procedure. A 17-second crew recognition and reaction time must be applied between cabin altitude warning and the initiation of an emergency descent.

Note: For the flight evaluation of the rapid descent, the test article must have the cabin volume representative of what is expected to be normal, such that Embraer must reduce the total cabin volume by that which would be occupied by the furnishings and total number of people. ”