

Flight Alert

Safety Information and Recommendations

Subject: Landing Gear System - Brake Carbon Disks Damages

Purpose

To inform owners and operators of ERJ-170/175 and ERJ-190/195 airplanes about the possibility of carbon disk brake failure during normal operation and consequent runway contamination by carbon disk brake debris.

Background

Was verified damages leading to unscheduled brake removals were found in North American and European operators.

Analysis

The main issue characteristic of these events is the loosening of brake lugs attachment in rotors, due to cracking in the anti-nest groove. In some events detached lugs were found on the taxiway due to cracking propagation.

Debris on the runway may be ingested by aircraft engines, resulting in engine failure. Debris can also become lodged in mechanisms, affecting the operation of landing gear, flaps, etc. These hazards may be minimized by reducing the possibility of carbon disc brake damages.

In order to find possible damaged brakes on the ERJ-170/175 and ERJ-190/195 Embraer revised the AMM TASK 32-49-05-000-801-A (Main Wheel – Removal), and AMM TASK 32-49-11-200-801-A (Brake Assembly (Complete - Wheel removed from aircraft) – Inspection) to include instructions on how to inspect carbon brake rotors and stators for damages, e.g., carbon chips and debris or crushed, flaked, soft,

fractured carbon or missing carbon elements, removing it from service preventively before the occurrence of an undesirable carbon brake disintegration event.

This inspection must be performed at every main wheel change, independent of brake assembly P/N and accumulated flight cycles thus avoiding events of brake disintegration and runway contamination during airplane operation.

Recommended Actions

The ANAC recommends owners and operators of EMBRAER ERJ-170/175 and ERJ-190/195 airplanes to do the following:

- Revise the approved Maintenance Program to include the revised AMM TASK 32-49-05-000-801-A (Main Wheel – Removal), and AMM TASK 32-49-11-200-801-A (Brake Assembly (Complete - Wheel removed from aircraft) – Inspection), in order to prevent undesirable brake failure event and runway contamination; and
- During each main wheel removal, independent of assembly P/N and accumulated flight cycles, perform a detailed visual inspection of the carbon brake rotors and stators in accordance with the revised AMM TASK 32-49-11-200-801-A (Brake Assembly (Complete - Wheel removed from aircraft) - Inspection).

Applicability

To all owners and operators of EMBRAER ERJ-170/175 and ERJ-190/195 airplanes.

Contact

For additional information regarding this subject please contact the Aeronautical Product Certification Branch (Gerência-Geral de Certificação de Produtos Aeronáuticos – GGCP) by phone at 55 (12) 3797-2525, by Fax at 55 (12) 3797-2330 or via e-mail at pac@anac.gov.br.

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