EASA	AIRWORTHINESS DIRECTIVE
	AD No.: 2014-0134R1 **Date: 04 June 2014** Note: This Airworthiness Directive (AD) is issued by EASA, acting in accordance with Regulation (EC) No 216/2008 on behalf of the European Community, its Member States and of the European third countries that participate in the activities of EASA under Article 66 of that Regulation.

This AD is issued in accordance with EU 748/2012, Part 21.A.3B. In accordance with EC 2042/2003 Annex I, Part M.A.301, the continuing airworthiness of an aircraft shall be ensured by accomplishing any applicable ADs. Consequently, no person may operate an aircraft to which an AD applies, except in accordance with the requirements of that AD, unless otherwise specified by the Agency [EC 2042/2003 Annex I, Part M.A.303] or agreed with the Authority of the State of Registry [EC 216/2008, Article 14(4) exemption].

Design Approval Holder's Name:	**Type/Model designation(s):**
EMBRAER, S.A.	ERJ 170 and ERJ 190 aeroplanes

TCDS Numbers:	EASA.IM.A.001 and EASA.IM.A.071
Foreign AD:	None
Revision:	This AD revises EASA AD 2014-0134 dated 27 May 2014.

ATA 32	**Landing Gear – Wheel Brake Carbon Discs – Inspection / Replacement**
Manufacturer(s):	Embraer, S.A., Empresa Brasileira de Aeronautica, S.A.
Applicability:	Embraer ERJ 170-100 STD, ERJ 170-100 LR, ERJ 170-200 STD and ERJ 170-200 LR aeroplanes, all serial numbers (s/n); and Embraer ERJ 190-100 ECJ, ERJ 190-100 IGW, ERJ 190-100 LR, ERJ 190-100 SR, ERJ 190-100 STD, ERJ 190-200 IGW, ERJ 190-200 LR and ERJ 190-200 STD aeroplanes, all s/n.
Reason:	Unscheduled brake assembly removals have been reported by North American and European operators, due to damaged brakes with damaged or missing rotor lugs and cracking in the anti-nest groove. This damage has predominantly been observed in the Rotor 1. In some events, lugs were found on the taxiway, which had detached as a result of crack propagation. This condition, if not detected and corrected, could result in brake debris falling on the runway and being ingested by engines, resulting in engine failure. Debris can also become lodged in landing gear or flap mechanisms, possibly resulting in reduced control of the aeroplane and representing a potential threat for the aeroplane structure. In order to detect a damaged brake assembly and to remove it from service before carbon brake disintegration, Embraer revised the relevant task in the Aircraft Maintenance Manual (AMM), Task 32-49-11-210-801-A, Brake Assembly Wear-Pin (Fast check - Wheel installed on aircraft), to include repetitive inspections (fast check) of the brake assembly. In support of these inspections, a soft life time limitation for the affected carbon brakes, Part

	Number (P/N) 90000583-3PR (ERJ 170) and P/N 90002340-2PR (ERJ 190), has been elaborated for each affected operator based on specific consideration on operation and environment. In October 2011 Meggitt Aircraft Braking Systems (MABS), the brake manufacturer, developed and applied an enhanced analysis method to ERJ 170 and ERJ 190 brakes, the results of which indicated that existing rotor design had negative margins for both rotor lug 1 shear and bearing stress. Subsequently, a new brake, P/N 90000583-5PR, became available in April 2013 for ERJ 170 aeroplanes, and a similar new brake P/N 90002340-4PR for ERJ 190 aeroplanes was approved in December 2013. Embraer issued Parts Information Letter (PIL) 170-32-0069 and PIL 190-32-0070 to inform operators about the availability of the new brakes. Existing brakes can be modified to the new standard per MABS Service Bulletin (SB) 90000583-32-08 (ERJ 170) and MABS SB 90002340-32-09 (ERJ190), respectively. Despite the recommended inspections and defined soft life time limits, several occurrences have continued to be reported by European operators, experiencing brake damage with parts found on the runway. Prompted by continued occurrences and based on the available information, EASA consider it is no longer acceptable to rely on voluntary operator actions to apply the soft life time limits to mitigate what are considered to be deficiencies in the design of P/N 90000583-3PR and P/N 90002340-2PR brake assemblies. For the reasons described above, EASA issued AD 2014-0134 to require repetitive inspections of the brake assembly and replacement of the carbon brakes with the new brakes, which terminates the repetitive inspections. Since that AD was issued, EASA was informed that certain AMM references used in the AD were incorrect, as these are 'customised' documents, applicable to one specific operator only. To avoid confusion, this AD is revised to remove the specific AMM references from paragraph (4).
Effective Date:	10 June 2014 (same as original issue)
Required Action(s) and Compliance Time(s):	Required as indicated, unless accomplished previously: (1) Within 100 flight cycles (FC) after the effective date of this AD, and, thereafter, at intervals not to exceed 100 FC, inspect the carbon brake assembly, P/N 90000583-3PR or P/N 90002340-2PR, as applicable to aeroplane installation, in accordance with the instructions of MABS Service Bulletin (SB) SB-32-1630. (2) As an alternative to the requirements of paragraph (1) of this AD, operators that have implemented the soft life time limits can accomplish these inspections in accordance with the instructions of MABS Service Information Letter (SIL) CS SIL-32-00086, or CS SIL-32-00087, or CS SIL-32-00088, as applicable to the operator. (3) If, during any inspection as required by paragraph (1), or as specified in paragraph (2) of this AD, as applicable, discrepancies (as defined in MABS SB-32-1630, or as defined in the applicable SIL specified in paragraph (2) of this AD) are found on a brake assembly, before next flight, replace the affected brake assembly with a serviceable part. (4) Within the compliance time as specified in Table 1 of this AD, as applicable, remove each carbon brake assembly P/N 90000583-3PR (ERJ 170) and P/N 90002340-2PR (ERJ 190) from the aeroplane and install the new standard carbon brake assembly, P/N 90000583-5PR (ERJ 170) or P/N 90002340-4PR (ERJ 190), as applicable, in accordance with approved aeroplane modification instructions. Replacement of brakes on an aeroplane can be accomplished in accordance with the instructions of the applicable AMM, Part II

(Maintenance Practices and Procedures (MPP)) Section 32-49-11 – Brake Assembly – Removal / Installation.

Table 1 – Carbon Brake Replacement

Aeroplane type	**Compliance Time** (after the effective date of this AD)
ERJ 170	Before 01 February 2015
ERJ 190	Before 01 January 2016

Modification of the affected brakes to the new carbon brake standard, P/N 90000583-5PR (ERJ 170) or P/N 90002340-4PR (ERJ 190), as applicable, can be accomplished during brake overhaul in accordance with the instructions of MABS SB 90000583-32-08 (ERJ 170) or MABS SB 90002340-32-09 (ERJ190), as applicable.

(5) Modification of an aeroplane as required by paragraph (4) of this AD constitutes terminating action for the repetitive inspections as required by paragraph (1) of this AD, or as specified in paragraph (2) of this AD, as applicable.

(6) For all aeroplanes: Do not install on any aeroplane carbon brakes as identified by P/N in, and from the date as specified in, Table 2 of this AD, as applicable.

Table 2 – Prohibition on Carbon Brake Installation

Brake P/N (aeroplane type)	**Do not install, from**
P/N 90000583-3PR (ERJ 170)	01 February 2015
P/N 90002340-2PR (ERJ 190)	01 January 2016

Ref. Publications:

MABS SB 90000583-32-08 dated 17 April 2013 (ERJ 170).

MABS SB 90002340-32-09 dated 20 January 2014 (ERJ 190).

MABS SB-32-1630 dated 23 May 2014.

MABS CS SIL-32-00086 issue 2, dated 21 May 2014.

MABS CS SIL-32-00087 issue 1, dated 15 May 2014.

MABS CS SIL-32-00088 issue 1, dated 15 May 2014.

The use of later approved revisions of these documents is acceptable for compliance with the requirements of this AD.

Remarks:

1. If requested and appropriately substantiated, EASA can approve Alternative Methods of Compliance for this AD.
2. The original issue of this AD was posted on 25 March 2014 as PAD 14-056 for consultation until 22 April 2014. The Comment Response Document can be found at http://ad.easa.europa.eu/.
3. Enquiries regarding this AD should be referred to the Safety Information Section, Executive Directorate, EASA. E-mail: ADs@easa.europa.eu.
4. For any question concerning the technical content of the requirements in this AD, please contact Embraer continued airworthiness, E-mail continued.airworthiness@embraer.com.br.