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## DEPARTMENT OF TRANSPORTATION

### Federal Aviation Administration

#### 14 CFR Part 39

[Docket No. FAA-2004-18564; Directorate Identifier 2004-NM-16-AD; Amendment 39-14352; AD 2005-22-08]

RIN 2120-AA64

**Airworthiness Directives; Empresa Brasileira de Aeronautica S.A. (EMBRAER) Model EMB-135BJ, -135ER, -135KE, -135KL, -135LR, -145, -145ER, -145MR, -145LR, -145XR, -145MP, and -145EP Airplanes**

**AGENCY:** Federal Aviation Administration (FAA), Department of Transportation (DOT).

**ACTION:** Final rule.

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**SUMMARY:** The FAA is adopting a new airworthiness directive (AD) for certain EMBRAER airplane models as identified above. This AD requires modifying the total air temperature (TAT) sensor heating system. This AD also allows replacing the fully automated digital electronic control (FADEC) assemblies with new or modified assemblies as an additional means of compliance. This AD results from a report indicating that the FADEC unit failed to compensate for ice accretion on the engine fan blades due to a false temperature signal from the TAT sensor to the FADEC. We are issuing this AD to prevent failure of the TAT sensor, which could result in insufficient thrust to take off or (if coupled with the loss of an engine during takeoff) to abort the takeoff in a safe manner, and consequent reduced controllability of the airplane.

**DATES:** This AD becomes effective November 30, 2005.

The Director of the Federal Register approved the incorporation by reference of a certain publication listed in the AD as of November 30, 2005.

**ADDRESSES:** You may examine the AD docket on the Internet at <http://dms.dot.gov> or in person at the Docket Management Facility, U.S. Department of Transportation, 400 Seventh Street, SW., Nassif Building, room PL-401, Washington, DC.

Contact Empresa Brasileira de Aeronautica S.A. (EMBRAER), P.O. Box 343–CEP 12.225, Sao Jose dos Campos–SP, Brazil, for service information identified in this AD.

**FOR FURTHER INFORMATION CONTACT:** Todd Thompson, Aerospace Engineer, International Branch, ANM-116, FAA, Transport Airplane Directorate, 1601 Lind Avenue, SW., Renton, Washington 98055-4056; telephone (425) 227-1175; fax (425) 227-1149.

## **SUPPLEMENTARY INFORMATION:**

### **Examining the Docket**

You may examine the AD docket on the Internet at <http://dms.dot.gov> or in person at the Docket Management Facility office between 9 a.m. and 5 p.m., Monday through Friday, except Federal holidays. The Docket Management Facility office (telephone (800) 647-5227) is located on the plaza level of the Nassif Building at the street address stated in the ADDRESSES section.

### **Discussion**

The FAA issued a supplemental notice of proposed rulemaking (NPRM) to amend 14 CFR part 39 to include an AD that would apply to certain EMBRAER Model EMB-135BJ, -135ER, -135KE, -135KL, -135LR, -145, -145ER, -145MR, -145LR, -145XR, -145MP, and -145EP airplanes. That supplemental NPRM was published in the Federal Register on August 17, 2005 (70 FR 48339). That supplemental NPRM proposed to require modifying the total air temperature (TAT) sensor heating system. That supplemental NPRM also allows for replacing the fully automated digital electronic control (FADEC) unit assemblies with new or modified assemblies as an additional means of compliance.

### **New Relevant Service Information**

EMBRAER has issued Service Bulletin 145-30-0028, Revision 10, dated March 22, 2005. Paragraph (f) of the supplemental NPRM refers to EMBRAER Service Bulletin 145-30-0028, Revision 09, dated March 1, 2004, as the appropriate source of service information for modifying the TAT sensor heating system. The applicability statement of the supplemental NPRM also refers to EMBRAER Service Bulletin 145-30-0028, Revision 09, as the source in which affected airplanes are identified. Revision 10 of the service bulletin includes minor editorial revisions, but no substantive changes. Therefore, we have revised the applicability statement and paragraph (f) of this AD to refer to EMBRAER Service Bulletin 145-30-0028, Revision 10. We have also revised paragraph (g) of this AD to give credit for modifications done before the effective date of this AD in accordance with Revision 09.

### **Comments**

We provided the public the opportunity to participate in the development of this AD. We have considered the comments received.

### **Support for the Supplemental NPRM**

One commenter supports the intent of the supplemental NPRM.

### **Request To Add Additional Means of Compliance**

The airplane manufacturer comments that it has recently approved FADEC software version 8.0. (Paragraph (h) of the supplemental NPRM specifies that replacing the existing FADEC assemblies with new or modified FADEC assemblies that include software version 7.6 is acceptable for compliance with paragraph (f) of the supplemental NPRM.) The commenter notes that, because the same features relating to temperature reading in FADEC software version 7.6 are included in software version 8.0, FADEC software version 8.0 should also be referenced as an acceptable means of compliance with the proposed requirements. The commenter also lists the service bulletins for installing FADEC software version 8.0.

We agree with the commenter's request. EMBRAER has issued the service bulletins specified in the table below.

**Service Information for Installing FADEC Assemblies Having Software Version 8.0**

<b>For EMBRAER Model—</b>	<b>EMBRAER Service Bulletin</b>	<b>Revision</b>	<b>Date</b>	<b>Which refers to Rolls-Royce Service Bulletin—</b>
EMB-135ER, -135KE, -135KL, -135LR, -145, -145ER, -145MR, -145LR, -145XR, -145MP, -145EP.	145-73-0027	Original	March 15, 2005	AE3007A-73-079.
EMB-135ER, -135KE, -135KL, -135LR, -145, -145ER, -145MR, -145LR, -145XR, -145MP, -145EP.	145-73-0028	Original	March 15, 2005	AE3007A-73-078.
EMB-135ER, -135KE, -135KL, -135LR, -145, -145ER, -145MR, -145LR, -145XR, -145MP, -145EP.	145-73-0029	Original	May 4, 2005	AE3007A-73-075.
EMB-135ER, -135KE, -135KL, -135LR, -145, -145ER, -145MR, -145LR, -145XR, -145MP, -145EP.	145-73-0029	01	June 27, 2005	AE3007A-73-075.
EMB-135ER, -135KE, -135KL, -135LR, -145, -145ER, -145MR, -145LR, -145XR, -145MP, -145EP.	145-73-0030	Original	May 5, 2005	AE3007A-73-076.
EMB-135ER, -135KE, -135KL, -135LR, -145, -145ER, -145MR, -145LR, -145XR, -145MP, -145EP.	145-73-0031	Original	May 5, 2005	AE3007A-73-077.
EMB-135BJ	145LEG-73-0005	Original	June 7, 2005	AE3007A-73-079.
EMB-135BJ	145LEG-73-0006	Original	March 8, 2005	AE3007A-73-078.

These service bulletins describe procedures for replacing existing FADEC assemblies with FADEC assemblies that have software version 8.0, including verifying the part number of the ITT trim plug and replacing it with an ITT trim plug of another part number if necessary. These service bulletins also refer to the Rolls-Royce service bulletins listed in the table above as additional sources of service information for replacing the FADEC assemblies. The EMBRAER service bulletins listed in the table also specify that installing the new or modified FADEC assemblies that have FADEC software version 8.0 also necessitates upgrading the engine indication and crew alerting system (EICAS), central maintenance computer (CMC), and IC-600 configuration modules, as applicable.

We have revised paragraph (h) and Table 2 of this AD to include references to these service bulletins and the applicable actions in them.

**Request To Add Reference to Rolls-Royce Service Bulletins**

One commenter requests that we revise Table 2 of the supplemental NPRM to give credit for replacing the FADEC assemblies with new or modified FADEC assemblies that include software version 7.6 in accordance with Rolls-Royce Service Bulletin AE3007A-73-067 or AE3007A-73-069, as applicable. The commenter states that adding these service bulletins to Table 2 would save it a lot of time that would otherwise be needed to request an Alternative Method of Compliance (AMOC) and would save the FAA time that would be needed to address those AMOCs.

We do not agree that any change to this AD is necessary to meet the intent of the commenter's request. Table 2 of this AD gives credit for replacing FADEC assemblies with new or modified FADEC assemblies that include software version 7.6 in accordance with, among other service bulletins, EMBRAER Service Bulletin 145-73-0022 or 145-73-0024, both Revision 01, both dated July 15, 2004. We explain in the preamble of the supplemental NPRM that these EMBRAER Service Bulletins refer to Rolls-Royce Service Bulletin AE3007A-73-067 and AE3007A-73-069, respectively, as additional sources of service information for replacing the FADEC assemblies. We find that doing the actions specified in Rolls-Royce Service Bulletin AE3007A-73-067 or AE3007A-73-069 is acceptable for compliance with the corresponding actions required by paragraph (h) of this AD, provided that all applicable EICAS, CMC, and IC-600 upgrades; as well as any other applicable actions associated with upgrading the EICAS, CMC, or IC-600; are also done, as specified in paragraph 1.C., "Description–Time for Accomplishment," of EMBRAER Service Bulletin 145-73-0022 or 145-73-0024, both Revision 01, as required by paragraph (h) of this AD. No change to the AD is needed in this regard.

**Clarification of AMOC Paragraph**

We have revised this action to clarify the appropriate procedure for notifying the principal inspector before using any approved AMOC on any airplane to which the AMOC applies.

**Conclusion**

We have carefully reviewed the available data, including the comments received, and determined that air safety and the public interest require adopting the AD with the changes described previously. We have determined that these changes will neither increase the economic burden on any operator nor increase the scope of the AD.

**Costs of Compliance**

The following table provides the estimated costs for U.S. operators to comply with this AD.

<b>ESTIMATED COSTS</b>						
<b>Action</b>	<b>Work hours</b>	<b>Average labor rate per hour</b>	<b>Parts</b>	<b>Cost per airplane</b>	<b>Number of U.S.-registered airplanes</b>	<b>Fleet cost</b>
Modify the TAT sensor heating	8	\$65	\$443	\$963	434	Up to \$417,942.

For airplanes modified in accordance with Revisions 04 through 08 of EMBRAER Service Bulletin 145-30-0028, it will take about 1 work hour per airplane to do the additional modification specified in Part III of the Accomplishment Instructions of the service bulletin, at an average labor rate of \$65 per work hour. Based on these figures, the estimated cost of doing this required action is \$65 per airplane.

**Authority for This Rulemaking**

Title 49 of the United States Code specifies the FAA's authority to issue rules on aviation safety. Subtitle I, Section 106, describes the authority of the FAA Administrator. Subtitle VII, Aviation Programs, describes in more detail the scope of the Agency's authority.

We are issuing this rulemaking under the authority described in Subtitle VII, Part A, Subpart III, Section 44701, "General requirements." Under that section, Congress charges the FAA with

promoting safe flight of civil aircraft in air commerce by prescribing regulations for practices, methods, and procedures the Administrator finds necessary for safety in air commerce. This regulation is within the scope of that authority because it addresses an unsafe condition that is likely to exist or develop on products identified in this rulemaking action.

### **Regulatory Findings**

We have determined that this AD will not have federalism implications under Executive Order 13132. This AD will not have a substantial direct effect on the States, on the relationship between the national government and the States, or on the distribution of power and responsibilities among the various levels of government.

For the reasons discussed above, I certify that this AD:

- (1) Is not a "significant regulatory action" under Executive Order 12866;
- (2) Is not a "significant rule" under DOT Regulatory Policies and Procedures (44 FR 11034, February 26, 1979); and
- (3) Will not have a significant economic impact, positive or negative, on a substantial number of small entities under the criteria of the Regulatory Flexibility Act.

We prepared a regulatory evaluation of the estimated costs to comply with this AD and placed it in the AD docket. See the ADDRESSES section for a location to examine the regulatory evaluation.

### **List of Subjects in 14 CFR Part 39**

Air transportation, Aircraft, Aviation safety, Incorporation by reference, Safety.

### **Adoption of the Amendment**

Accordingly, under the authority delegated to me by the Administrator, the FAA amends 14 CFR part 39 as follows:

#### **PART 39—AIRWORTHINESS DIRECTIVES**

1. The authority citation for part 39 continues to read as follows:

Authority: 49 U.S.C. 106(g), 40113, 44701.

#### **§ 39.13 [Amended]**

2. The Federal Aviation Administration (FAA) amends § 39.13 by adding the following new airworthiness directive (AD):

# AIRWORTHINESS DIRECTIVE



Aircraft Certification Service  
Washington, DC

U.S. Department  
of Transportation  
**Federal Aviation  
Administration**

*We post ADs on the internet at [www.faa.gov/aircraft/safety/alerts/](http://www.faa.gov/aircraft/safety/alerts/)*

The following Airworthiness Directive issued by the Federal Aviation Administration in accordance with the provisions of Title 14 of the Code of Federal Regulations (14 CFR) part 39, applies to an aircraft model of which our records indicate you may be the registered owner. Airworthiness Directives affect aviation safety and are regulations which require immediate attention. You are cautioned that no person may operate an aircraft to which an Airworthiness Directive applies, except in accordance with the requirements of the Airworthiness Directive (reference 14 CFR part 39, subpart 39.3).

**2005-22-08 Empresa Brasileira de Aeronautica S.A. (EMBRAER):** Amendment 39-14352.  
Docket No. FAA-2004-18564; Directorate Identifier 2004-NM-16-AD.

## Effective Date

- (a) This AD becomes effective November 30, 2005.

## Affected ADs

- (b) None.

## Applicability

(c) This AD applies to EMBRAER Model EMB-135BJ, -135ER, -135KE, -135KL, -135LR, -145, -145ER, -145MR, -145LR, -145XR, -145MP, and -145EP airplanes; as identified in EMBRAER Service Bulletin 145-30-0028, Revision 10, dated March 22, 2005; certificated in any category.

## Unsafe Condition

(d) This AD was prompted by a report indicating that the fully automated digital electronic control (FADEC) unit failed to compensate for ice accretion on the engine fan blades due to a false temperature signal from the total air temperature (TAT) sensor to the FADEC. We are issuing this AD to prevent failure of the TAT sensor, which could result in insufficient thrust to take off or (if coupled with the loss of an engine during takeoff) to abort the takeoff in a safe manner, and consequent reduced controllability of the airplane.

## Compliance

(e) You are responsible for having the actions required by this AD performed within the compliance times specified, unless the actions have already been done.

## Modification

(f) Within 180 days after the effective date of this AD: Modify the TAT sensor heating system in accordance with the Accomplishment Instructions of EMBRAER Service Bulletin 145-30-0028, Revision 10, dated March 22, 2005.

## Modifications Done According to Previous Revisions of the Service Bulletin

(g) Actions done before the effective date of this AD are acceptable for compliance with the corresponding requirements of this AD as specified in paragraphs (g)(1) and (g)(2) of this AD.

(1) Modifications in accordance with EMBRAER Service Bulletin 145-30-0028, Revision 09, dated March 1, 2004, are acceptable for compliance with paragraph (f) of this AD.

(2) Modifications in accordance with the revisions of the service bulletin in Table 1 of this AD are acceptable for compliance with the corresponding action in this AD, provided that the additional actions specified in PART III of the Accomplishment Instructions of EMBRAER Service Bulletin 145-30-0028, Revision 09, dated March 1, 2004, or Revision 10, dated March 22, 2005, are accomplished within the compliance time required by paragraph (f) of this AD.

**TABLE 1.—PREVIOUS REVISIONS OF THE SERVICE BULLETIN**

EMBRAER Service Bulletin	Revision	Date
145-30-0028	04	March 13, 2001.
145-30-0028	05	May 24, 2001.
145-30-0028	06	September 26, 2001.
145-30-0028	07	April 10, 2003.
145-30-0028	08	August 20, 2003.

## Credit for Replacement of FADEC Assemblies

(h) Replacing the existing FADEC assemblies with new or modified FADEC assemblies that include software version 7.6 or 8.0, in accordance with the Accomplishment Instructions of the applicable service bulletin listed in Table 2 of this AD, is acceptable for compliance with paragraph (f) of this AD. If the FADEC assemblies are replaced with new or modified assemblies as specified in this paragraph, all applicable engine indication and crew alerting system (EICAS), central maintenance computer (CMC), and IC-600 upgrades; as well as any other applicable actions associated with upgrading the EICAS, CMC, or IC-600; must also be done, as specified in the section of the service bulletin identified in the "Paragraph Where Upgrades are Identified" column of Table 2 of this AD.

**TABLE 2.—SERVICE BULLETINS FOR UPGRADING FADEC ASSEMBLIES**

For EMBRAER Model—	EMBRAER Service Bulletin	Revision	Date	Paragraph where upgrades are identified
EMB-135ER, -135KE, -135KL, -135LR, -145, -145ER, -145MR, -145LR, -145XR, -145MP, -145EP.	145-73-0021	Original	July 23, 2004	1.C., "Description—Time for Accomplishment".
EMB-135ER, -135KE, -135KL, -135LR, -145, -145ER, -145MR, -145LR, -145XR, -145MP, -145EP.	145-73-0022	01	July 15, 2004	1.C., "Description—Time for Accomplishment".
EMB-135ER, -135KE, -135KL, -135LR, -145, -145ER, -145MR, -145LR, -145XR, -145MP, -145EP.	145-73-0023	Original	June 28, 2004	1.C., "Description—Time for Accomplishment".
EMB-135ER, -135KE, -135KL, -135LR, -145, -145ER, -145MR, -145LR, -145XR, -145MP, -145EP.	145-73-0024	01	July 15, 2004	1.C., Description—Time for Accomplishment".

<b>For EMBRAER Model—</b>	<b>EMBRAER Service Bulletin</b>	<b>Revision</b>	<b>Date</b>	<b>Paragraph where upgrades are identified</b>
EMB-135ER, -135KE, -135KL, -135LR, -145, -145ER, -145MR, -145LR, -145XR, -145MP, -145EP.	145-73-0025	Original	July 23, 2004	1.C., "Description— Time for Accomplishment".
EMB-135ER, -135KE, -135KL, -135LR, -145, -145ER, -145MR, -145LR, -145XR, -145MP, -145EP.	145-73-0027	Original	March 15, 2005	1.B., "Concurrent Requirements".
EMB-135ER, -135KE, -135KL, -135LR, -145, -145ER, -145MR, -145LR, -145XR, -145MP, -145EP.	145-73-0028	Original	March 15, 2005	1.B., "Concurrent Requirements".
EMB-135ER, -135KE, -135KL, -135LR, -145, -145ER, -145MR, -145LR, -145XR, -145MP, -145EP.	145-73-0029	Original	May 4, 2005	1.B., "Concurrent Requirements".
EMB-135ER, -135KE, -135KL, -135LR, -145, -145ER, -145MR, -145LR, -145XR, -145MP, -145EP.	145-73-0029	01	June 27, 2005	1.B., "Concurrent Requirements".
EMB-135ER, -135KE, -135KL, -135LR, -145, -145ER, -145MR, -145LR, -145XR, -145MP, -145EP.	145-73-0030	Original	May 5, 2005	1.B., "Concurrent Requirements".
EMB-135ER, -135KE, -135KL, -135LR, -145, -145ER, -145MR, -145LR, -145XR, -145MP, -145EP.	145-73-0031	Original	May 5, 2005	1.B., "Concurrent Requirements".
EMB-135BJ	145LEG-73-0003	01	July 15, 2004	1.C., "Description— Time for Accomplishment".
EMB-135BJ	145LEG-73-0004	02	October 6, 2004	1.C., "Description— Time for Accomplishment".
EMB-135BJ	145LEG-73-0005	Original	June 7, 2005	1.D., "Description".
EMB-135BJ	145LEG-73-0006	Original	March 8, 2005	1.B., "Concurrent Requirements".
EMB-145XR	145-73-0026	Original	June 28, 2004	1.C., "Description— Time for Accomplishment".

### **Alternative Methods of Compliance (AMOCs)**

(i)(1) The Manager, International Branch, ANM-116, Transport Airplane Directorate, FAA, has the authority to approve AMOCs for this AD, if requested in accordance with the procedures found in 14 CFR 39.19.

(2) Before using any AMOC approved in accordance with 14 CFR 39.19 on any airplane to which the AMOC applies, notify the appropriate principal inspector in the FAA Flight Standards Certificate Holding District Office.

## **Related Information**

(j) Brazilian airworthiness directive 2004-01-02R2, dated November 29, 2004, also addresses the subject of this AD.

## **Material Incorporated by Reference**

(k) You must use EMBRAER Service Bulletin 145-30-0028, Revision 10, dated March 22, 2005, to perform the actions that are required by this AD, unless the AD specifies otherwise. The Director of the Federal Register approved the incorporation by reference of this document in accordance with 5 U.S.C. 552(a) and 1 CFR part 51. Contact Empresa Brasileira de Aeronautica S.A. (EMBRAER), P.O. Box 343–CEP 12.225, Sao Jose dos Campos–SP, Brazil, for a copy of this service information. You may review copies at the Docket Management Facility, U.S. Department of Transportation, 400 Seventh Street SW., room PL-401, Nassif Building, Washington, DC; on the Internet at <http://dms.dot.gov>; or at the National Archives and Records Administration (NARA). For information on the availability of this material at the NARA, call (202) 741-6030, or go to [http://www.archives.gov/federal\\_register/code\\_of\\_federal\\_regulations/ibr\\_locations.html](http://www.archives.gov/federal_register/code_of_federal_regulations/ibr_locations.html).

Issued in Renton, Washington, on October 18, 2005.

Kevin M. Mullin,

Acting Manager, Transport Airplane Directorate, Aircraft Certification Service.

[FR Doc. 05-21310 Filed 10-25-05; 8:45 am]

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