



AGÊNCIA NACIONAL DE AVIAÇÃO CIVIL - BRAZIL

BRAZILIAN AIRWORTHINESS DIRECTIVE

AD No.: 2024-02-02

Effective Date: 26 Feb. 2024

The following Brazilian Airworthiness Directive (AD), issued by the Agência Nacional de Aviação Civil (ANAC) in accordance with provisions of Chapter IV, Title III of Código Brasileiro de Aeronáutica - Law No. 7,565 dated 19 December 1986 - and Regulamento Brasileiro da Aviação Civil (RBAC) 39, applies to all aircraft registered in the Registro Aeronáutico Brasileiro. No person may operate an aircraft to which this AD applies, unless it has previously complied with the requirements established herein.

AD No. 2024-02-02 - EMBRAER / 39-1543.

APPLICABILITY:

(a) This Airworthiness Directive is applicable to Embraer S.A. airplane models EMB-545 and EMB-550 all serial numbers.

REVISION:

Not applicable.

REASON:

This AD was prompted by the report of a hard landing event with substantial damage to the airplane, in which the AOA Limiter was engaged in the final approach phase, in unstable air conditions, and remained engaged until the aircraft's touchdown on the runway. If the AOA Limiter remains active during the final approach phase when the landing flare is commanded, pitch response may be reduced during a critical phase of flight near the ground, and in unstable air conditions, it may result in a high rate of descent landing and the possible consequent catastrophic structural damage of the airplane on landing.

Since this condition may occur in other airplanes and affects flight safety, corrective action is required. Thus, sufficient reason exists to request compliance with this AD in the indicated time limit.

REQUIRED ACTION:

Airplane Flight Manual Revision

COMPLIANCE:

Required as indicated below, unless already accomplished.

(a) AFM Amendment

(1) Approach Speed

Within 05 days after the effective date of this AD, revise **SECTION 2-10 - OPERATIONAL LIMITATIONS - AIRSPEEDS** of the applicable AFM to incorporate the following information:

APPROACH SPEED

- Approach speed for normal operations is V_{REF} plus one-half of the steady headwind component plus the gust increment above the steady wind to the reference speed:

$$V_{AP} = V_{REF} + 1/2 \text{ steady headwind component} + \text{gust increment}$$

- The V_{AP} range for normal operation is minimum of $V_{REF} + 5\text{kt}$ and maximum of $V_{REF} + 20\text{kt}$
- The additives for V_{AP} must be set for normal operations. For emergency and abnormal procedures, the AFM must be followed. If the AFM procedure requires V_{REF} increments over 20 kt this speed must be set.

Note: Additives for V_{AP} must be kept until runway threshold

(2) Performance for increased V_{REF} Landing

Within 05 days after the effective date of this AD, revise **SECTION 2-10 - OPERATIONAL LIMITATIONS - AIRSPEEDS** of the applicable AFM to incorporate the following information:

PERFORMANCE FOR INCREASED VREF LANDING

Prior to arrival, whenever the landing is performed with V_{AP} (V_{REF} + wind correction) the landing distance must be adjusted accordingly.

OPERA Performance

If performance data is obtained from OPERA and the landing is performed using additives to the V_{REF} , apply the additive to V_{REF} overspeed in the performance calculation to obtain the landing performance data applicable to the airplane configuration.

TOLD Performance and Unfactored Landing Distance Performance (AFM, AOM, QRH)

- If performance data is obtained from TOLD or unfactored landing distance tables (AFM, AOM, QRH) and the landing is performed using additives to the V_{REF} , apply the Landing Distance Correction Factors applicable to the V_{REF} additives in the performance calculation to obtain the landing performance data applicable to the airplane configuration and runway condition (dry/wet)
- Landing Distance Correction Factors:

V_{REF} additive 5 kt	V_{REF} additive 10 kt	V_{REF} additive 15 kt	V_{REF} additive 20 kt
1.1	1.2	1.3	1.4

Note: For contaminated runways, performance data obtained from Operational Landing Distance tables in QRH must be adjusted considering the V_{AP}

(3) Flight Controls Limitation

Within 05 days after the effective date of this AD, revise **SECTION 2 - LIMITATIONS** of the applicable AFM to incorporate the following information:

FLIGHT CONTROLS

WARNING: WHEN AOA LIMITER PROTECTION IS ENGAGED, RAPID AND LARGE ALTERNATING PITCH CONTROL INPUTS MUST BE AVOIDED AS THEY MAY PREVENT OR DELAY THE AOA LIMITER PROTECTION DISENGAGEMENT

(4) Normal Procedures - Approach

Within 05 days after the effective date of this AD, revise **SECTION 3-21 - NORMAL PROCEDURES - APPROACH** of the applicable AFM to incorporate the following information:

STABILIZED APPROACH

If the AOA Limiter Protection is engaged during the final approach and prior to flare initiation, the approach is considered unstable and a go-around must be initiated

Note: Three indications below shows that the AOA Limiter Protection is engaged:

- airspeed inside yellow band or
- the yellow background on the airspeed readout, or
- the yellow Pitch Limit Indicator

USE OF AUTOTHROTTLE

Use of autothrottle is recommended for approach and landing to minimize crew workload.

However, pilots must closely monitor the thrust levers until touchdown and override the Autothrottle if performance is not as expected.

NOTE: The AFM alteration required by this AD may be accomplished by inserting a copy of this AD into the Aircraft Flight Manual.

(c) Interim action

This AD is considered an interim action. ANAC may consider further mandatory actions

(d) Alternative methods of compliance (AMOCs).

A different method or a different compliance time, with the requirements of this AD, may be used if approved by the Manager of the Continuing Airworthiness Technical Branch (GTAC) of ANAC.

(e) Additional Information

Embraer Operational Bulletin O.B 550-002/23, issued on October 11th, 2023, and Embraer Operational Bulletin O.B P550-001/24, issued on February 05th, 2024, provide additional information regarding the actions required by this AD.

Record compliance with this AD in the applicable maintenance log book.

CONTACT:

For additional technical information, contact:

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APPROVAL:

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NOTA: Original in Portuguese language signed and available in the files of the Continuing Airworthiness Technical Branch (GTAC) of the National Civil Aviation Agency (ANAC).

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