



**AGÊNCIA NACIONAL DE AVIAÇÃO CIVIL - BRASIL**

**TYPE CERTIFICATE DATA SHEET Nº EA-2008T09**

Type Certificate Holder:

Embraer Empresa Brasileira de Aeronáutica S.A  
Av. Brigadeiro Faria Lima, 2.170  
12227-901 – S.J dos Campos –SP  
**Brazil**

EA-2008T09  
Sheet 01

**EMBRAER**

**EMB-500**

09 December 2008

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This data sheet, which is part of Type Certificate No. 2008T09, prescribes conditions and limitations under which the product, for which the Type Certificate was issued, meets the airworthiness requirements of the Brazilian Aeronautical Regulations.

**I – Model EMB-500 (Normal Category), approved 09 December 2008.**

<b>ENGINE</b>	Two Pratt & Whitney Canada PW617F-E turbofans (ANAC TCDS EM-2008T08)
<b>FUEL</b>	Brazilian Specification CNP08-QAV-1 Specification ASTM-D1655, type Jet A, Jet A-1 Specification MIL-T-83133, type JP-8
<b>ENGINE LIMITS</b>	Limits Static thrust standard day, sea level: Takeoff 769.29 kg (1 696 lb) (ATR) (10 min.) 806.03 kg (1 820 lb) Max. permissible engine rotor operating speeds (Takeoff and Maximum Continuous): N1(fan) 100% (100% = 19 845 rpm) N1 Transient (operation 20 sec) 101% (101% = 20 043 rpm) N2 (Gas Gen.) 100.4% (100.4% = 40 200 rpm) N2 Transient (operation 20 sec) 102% (102% = 40840 rpm) Max. permissible interturbine gas temperatures: Takeoff 830 °C ATR(5 min) 845 °C Max. continuous 830 °C Transient (starting 5 sec.) 892 °C Transient (operation 20 sec) 862 °C

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**AIRSPEED LIMITS (IAS)**

	km/h (knots)	Mach
Maximum operating ( $V_{MO}$ ): Sea level to 28000 ft.	509.3 (275)	0.70
Maximum operating ( $M_{mo}$ ) above 28000 ft.	-	0.70
Maneuvering ( $V_A$ ) - sea level:	345.0 (186)	-
Flaps extended ( $V_{FE}$ )		
10° (takeoff):	370.4 (200)	-
26° (takeoff and landing):	296.3 (160)	-
36° (landing):	268.5 (145)	-
Minimum control speed - Air ( $V_{MC}$ ):		
10° (takeoff):	180 (97)	-
26° (takeoff):	170 (92)	-
26° (landing):	160 (86)	-
36° (landing):	160 (86)	-

Note: The values presented above refer to the maximum  $V_{MC}$  for the aircraft envelope (the values can change according to the temperature and altitude)

Maximum tire ground speed:	257.4 (139)	-
L. G. operation - extend ( $V_{LO}$ ):	333.4 (180)	-
L. G. operation - retract ( $V_{LO}$ ):	333.4 (180)	-
L. G. extended ( $V_{LE}$ ):	509.3 (275)	-

**CG RANGE**Forward Limits:

Takeoff and Landing Conditions: Linear variation from 5.90 m (232.24 in) aft of datum (35% MAC) at 3000 kg (6614 lb) to 5.68 m (223.53 in) aft of datum (21.5 % MAC) at 3220 kg (7099 lb); Constant value of 5.68m (223.53 in) aft of datum (21.5 % MAC) at 3220 kg (7099 lb) to 4030 kg (8885 lb); Linear variation from 5.68 m (223.53 in) aft of datum (21.5% MAC) at 4030 kg (8885lb) to 5.71 m (224.82 in) aft of datum (23.5% MAC) at 4750 kg (10472 lb); Constant value of 5.71 m (224.82 in) aft of datum (23.5% MAC) at 4750 kg (10472 lb) to 4770 kg (10516 lb).

Aft Limits:

Landing Conditions: Linear variation from 5.90 m (232.24 in) aft of datum (35.0% MAC) at 3000 kg (6614 lb) to 5.96 m (234.50 in) aft of datum (38.5 % MAC) at 3420 kg (7540 lb); Constant value of 5.96 m (234.5 in) aft of datum (38.5 % MAC) at 3420 kg (7540 lb) to 4030 kg (8885 lb); Linear variation from 5.96 m (234.50 in) aft of datum (38.5% MAC) at 4030 kg (8885 lb) to 5.93 m (233.47 in) aft of datum (36.9 % MAC) at 4750 kg (10472 lb); Constant value of 5.93 m (233.47 in) aft of datum (36.9 % MAC) at 4750kg (10472 lb) to 4770 kg (10516 lb).

Landing Gear retracting moment (-17.63) m-kg (-1530.22) in-lb.

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<b>DATUM</b>	2.51 m (98.82 in) forward of the jig point (nose jack pad location).	
<b>LEVELING MEANS</b>	Located in the main door between frames 9 and 10 (see AMM for further information)	
<b>MEAN AERODYNAMIC CHORD</b>	1.64 m (64.57 in.) (L.E. of MAC at + 5.32 m (209.65 in.) aft of datum)	
<b>MAXIMUM WEIGHT</b>	Takeoff:	4 750.0 kg (10 472 lb)
	Landing:	4 430.0 kg (9 766 lb)
	Zero Fuel:	3 803.0 kg (8 444 lb)
	Ramp:	4 770.0 kg (10 516 lb)
<b>MINIMUM CREW</b>	Crew for all Flights (See note 5 for cockpit equipment/arrangement restrictions): One pilot (in the left pilot seat) plus additional equipment as specified in the Limitations Section of the ANAC Approved Airplane Manual or one pilot and one copilot	
<b>MAXIMUM OCCUPANTS</b>	Maximum six (two crew plus four passenger seats) Refer to the Airplane Flight Manual (AFM-2655) section 6 "Weight & Balance" for seat configurations and moment arms.	
<b>MAXIMUM BAGGAGE</b>	Forward baggage compartment	30 kg (66 lb) (+1.16 m (45.47 in) aft of datum)
	AFT baggage compartment	160 kg (353 lb) (+7.98 m (314.27 in) aft of datum)
	Wardrobe	30 kg (66 lb) (+3.64 m (143.46 in) aft of datum)
	Lavatory Cabinet	15 kg (33 lb) (+6.34 m (249.76 in) aft of datum)
<b>FUEL CAPACITY</b>	Total usable fuel 1 272 kg (2 806 lb.) Two wing tanks with 636.4 kg (1 403 lb) usable each; (see NOTE 1 for unusable) + 5.87 m (230.91 in) aft of datum, considering density of 0.803 kg/l (6.70 lb/US gal)	
<b>OIL CAPACITY</b>	Tank mounted on each engine: 4 quarts (3.79 liters) total each engine; + 7.68 m (302.52 in.) aft of datum; (see NOTE 1)	
<b>HYDRAULIC FLUID CAPACITY</b>	1.4 kg (3.09 lb.) at + 0.87 m (34.17 in.) aft of datum, considering density of 0.846 kg/l (7.06 lb/gal)	

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**MAXIMUM OPERATING ALTITUDE** 12.497 m (41.000 ft)

**TEMPERATURE OPERATING LIMITS**  
 Maximum: 52 °C  
 Minimum: -54 °C

**CONTROL SURFACE**

Elevator: Up 27° +1°, -1°  
 Down 19° +1°, -1°

**MOVEMENTS**

Elevator trim tab\*: Up 6° +1°, -1°  
 Down 13° +1°, -1°

Rudder: Right 27° +1°, -1°  
 Left 27° +1°, -1°

Rudder trim tab\*: Right 16.5° +1°, -1°  
 Left 16.5° +1°, -1°

Aileron: Up 25° +1°, -1°  
 Down 15° +1°, -1°

Aileron trim tab\*: Up 20° +1°, -1°  
 Down 20° +1°, -1°

Wing flaps: TO 10° +1°, -1°  
 TO /Land 26° +1°, -1°  
 Land 36° +1.5°, -1.5°

Note: valid only for neutral position See Airplane Maintenance Manual (AMM) for rigging instructions

**SERIAL NUMBER** 50000005 and up

**CERTIFICATION BASIS**

1) Brazilian Type Certificate No. 2008T09 issued on 09 December 2008, based on the RBHA 23, which endorses the 14 CFR Part 23, effective 1 February 1965, as amended by 23-1 through 23-55 effective on 01 March 2002, and additional requirements:

2) Noise requirements:

RBHA 36, corresponding to ICAO Annex 16 Volume I, Chapter 4 (Fourth Edition) effective July 2005, as amended on the application date.

3) Emission requirements:

RBHA 34, corresponding to US 14 CFR Part 34 effective 10 September 1990, as amended on the application date

4) Special Conditions as follows:

(a) "Resolução N° 39", 15 Aug. 2008, Special Condition for Subpart G (Operating Limitations and Information) – EMB-500 FCAR EV-04.

(b) "Resolução N° 66", 26 Aug. 2008, Special Condition for Subpart B (flight) – EMB-500 FCAR EV-01."

(c) "Resolução N° 43", 18 Aug. 2008 High Intensity Radiated Fields (HIRF) Protection – EMB-500 FCAR SE-02.

**CERTIFICATION BASIS**

- (d) “Resolução N° 44”, 18 Aug. 2008 Hot Weather Operation – EMB-500 FCAR PR-09.
  - (e) “Resolução N° 45”, 18 Aug. 2008 Fire Extinguishing for Aircraft Fuselage Mounted Engines – EMB-500 FCAR PR-03.
  - (f) “Resolução N° 46”, 18 Aug. 2008 Special Condition for FADEC. – EMB-500 FCAR PR-07.
  - (g) “Resolução N° 47”, 18 Aug. 2008 Brakes – Designation of Applicable Regulations – EMB-500 FCAR SM-02.
  - (h) “Resolução N° 56”, 9 Oct. 2008 Airspeed Calibration – EMB-500 FCAR EV-02.
- 5) Equivalent levels of safety as follows:
- (a) “Decisão N° 302”, 18 Aug. 2008, RBHA/14 CFR 1.21(b)(1); RBHA/14 CFR 23.1555(d)(1) & 23.1337(b)(1) ,Control Markings – Usable Fuel Capacity – EMB-500 FCAR PR-05.
  - (b) “Decisão N° 303”, 18 Aug. 2008 RBHA/14 CFR 21.21(b)(1); RBHA/14 CFR 23.1305, 23.1309, 23.1321 & 25.1549, Digital only Display of Turbine Engine High/Intermediate Pressure Rotor Speed (N2) – EMB-500 FCAR PR-02.
  - (c) “Decisão N° 306”, 18 Aug. 2008 RBHA/14CFR 21.21(b)(1); RBHA/14 CFR 23.601 & 23.807(e)(2) ,Ditching Emergency Exit for Passenger – EMB-500 FCAR EI-03.
  - (d) “Decisão N° 381”,29 Sep. 2008 RBHA/14 CFR 23.1553, 23.1337(b)(1), 23.959,Digital Fuel Quantity Indication – EMB-500 FCAR PR-11
- 6) Exemption as follows:
- “Decisão N° 383”, 26 Sep. 2008 RBHA/14 CFR 23.181(b), Exemption for Dynamic Stability – EMB-500 FCAR EV-05
- 7) Compliance with ice protection has been demonstrated in accordance with RBHA/14 CFR 23.1416 and 23.1419.
- 8) Compliance with the provisions for ditching equipment has been demonstrated in accordance with RBHA/14 CFR 23.1415 (a) (b).
- 9) RVSM Approval: S/N 50000005 and on: All airplanes are equipped with Garmin G1000 dual RVSM capable Air Data Computers and pilot’s and copilot’s Primary Flight Displays as standard equipment. Therefore the crew must be training for RVSM operation. Each operator must obtain RVSM operating approval directly from the ANAC.

**REQUIRED EQUIPMENT**

The basic required equipment, as prescribed in the applicable airworthiness regulations (see Certification Basis) must be installed in the airplane for certification.

**NOTES:****NOTE 1**    Weight and balance.

Current weight and balance report, including the list of equipment that are part of the certificated basic empty weight and loading instructions, must be provided for each aircraft at the time of original certification

The certificated empty weight and corresponding center of gravity location must include:

Unusable fuel:    20 kg (44 lb) at + 5.81 m (228.90 in.) aft of datum

Full oil:\*        8 kg (17.64 lb) at + 7.68 m (302.52 in) aft of datum\*

Hydraulic Fluid:    1.4 kg (3.09 lb) at + 0.87 m (34.17 in) aft of datum

\*It is considered the oil from the engine installation (filters and lines)

**NOTE 2**    Markings and placards.

All marking and placards required by the applicable certification requirements (see certification basics) and by the operational requirements must be installed in the appropriated locations. Required placards and marking are listed in chapter Eleven (11) of the Aircraft Illustrated Parts Catalog (AIPC) and Airplane Maintenance Manual (AMM).

**NOTE 3**    Continuing Airworthiness.

See Maintenance Manual, Chapter Four (4), "Airworthiness Limitations" for Systems Airworthiness Limitations, Structure Airworthiness Limitations (ALI) and Life-Limited Items (LLI). The life limit for rotating parts on the PW617F-E engine is in the Airworthiness Limitations Manual of the Pratt & Whitney Canada Engine P/N 3072699, latest revision.

**NOTE 4**    All replacement seats (crew and passenger), although they may comply with TSO C127, must also be demonstrated to comply with installation requirements into the aircraft listed in RBHA/14 CFR 23.2, 23.561, 23.562, and 23.785.

The foam cushion buildup of all seats (crew and passenger) may not be altered. Any deviations in the foam construction or stiffness must be demonstrated by test or analysis to comply with the 14 CFR 23.562 paragraph.

**NOTE 5**    Approval for operation with a minimum crew of one pilot (in the left pilot seat) is based upon the cockpit equipment installation and arrangement evaluated during ANAC certification testing. No significant changes may be made to the installed cockpit equipment or arrangement (EFIS, autopilot, avionics, etc.), except as permitted by the approved MMEL, without prior approval from the responsible Aircraft Certification Office.**NOTE 6**    The EMB-500 is often referred to in Embraer marketing literature as the "PHENOM 100". This name is strictly marketing designation and is not part of the official model designation.

Original in the Portuguese language signed by:

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