

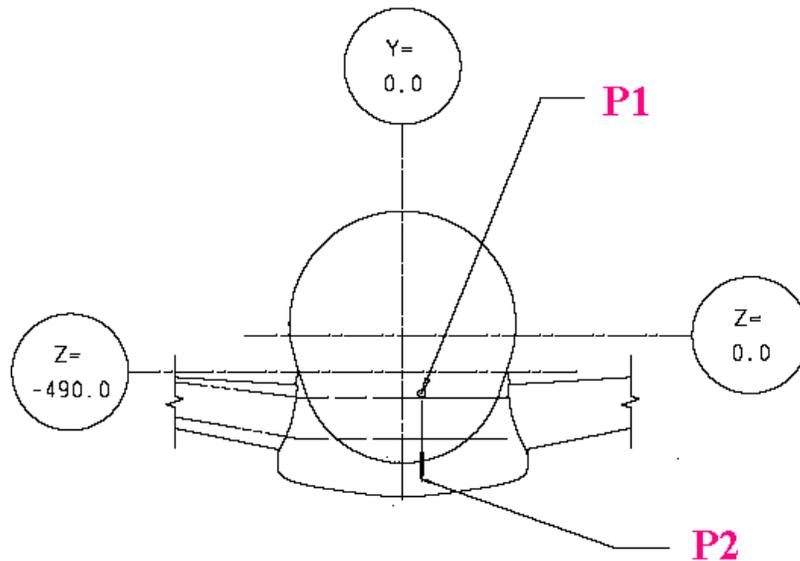


<u>Airspeed Limits (I.A.S.)</u>	$V_{MO}$		300 KIAS from sea level to 8,000 ft increasing linearly to 320 KIAS at 10,000 ft.
	$V_{MO}$ $M_{MO}$		320 KIAS from 10,000 ft to 28,887 ft. 0.82 Mach from 28,887 ft to 41,000 ft.
	$V_A$ (Maneuvering)		250 KIAS from sea level increasing linearly to 286 KIAS at 25,590 ft., and increasing linearly to 295 KIAS at 32,684 ft.
	$V_A$ (Maneuvering)		0.82 Mach from 32,684 ft to 41,000 ft.
	$V_{FE}$ (Flaps Extended) (IAS up to 25,590 ft)	Detent 1	230 KIAS
		Detent 2	215 KIAS
		Detent 3	200 KIAS
		Detent 4	180 KIAS
		Detent 5	180 KIAS
		Detent FULL	165 KIAS
	Maximum Landing Gear Operating Speed ( $V_{LO}$ ):		
		Retraction	235 KIAS
		Extension	265 KIAS
	Maximum Landing Gear Extended Speed ( $V_{LE}$ ):		265 KIAS
	Tire Speed		225 MPH

Datum A perpendicular plane to the fuselage centerline, located at 14 443 mm ahead of the wing stub front spar. This spar is located 414 mm ahead of the wing jack points.

Mean Aerodynamic Chord The MAC length is 3682 mm.

Leveling Means Plumb line between the points P1 and P2 located inside of the landing gear compartment on the left side, as illustrated below.



LEVELING OF FUSLG COORDINATE POINTS			
POINT	X	Y	Z
P1	17955.20	-250.00	-774.872
P2	17955.20	-250.00	-1683.47

<u>Center of Gravity Limits</u>	Refer to AFM No. AFM-1912.		
<u>Maximum Weights</u>	Max Ramp Weight:	105,711 lbf (47,950 kgf)	
	Max Takeoff Weight:	105,359 lbf (47,790 kgf)	
	Max Landing Weight:	94,798 lbf (43,000 kgf)	
	Max Zero Fuel Weight:	89,948 lbf (40,800 kgf)	
<u>Maximum Baggage</u>	Forward Cargo Compartment	4,078 lb (1,850 kgf)	
	Aft Cargo Compartment	3,638 lb (1,650 kgf)	
<u>Fuel Capacity</u>	4,267 gallons (16,152.6 liters) in two tanks of 2,133 gallons (8,076.3 liters) each. Unusable fuel of 29.96 gallons (113.4 liters) (56.7 liters at 0.811 kg/liter in each tank).		
<u>Minimum Crew</u>	2 - Pilot and Copilot.		
<u>Maximum Passenger Seating Capacity</u>	110 maximum.		
<u>Oil Capacity</u>	Oil capacity per Engine: Total: 13.8 liters (14.6 US quarts) Useable: 9.4 liters (9.9 US quarts)		
<u>Maximum Altitudes</u>	41,000 ft. (operating) 10,000 ft. (takeoff and landing)		
<u>Control Surface Movements</u>	Ailerons	25° TE up, 15° TE down	
	Elevator	25° TE up, 18° TE down	
	Stabilizer	11° TE up, 4° TE down	
	Rudder	31.5° right, 31.5° left	
	Ground Spoiler	60°	
	Outboard Spoiler	40°	
	Flap and Slat		
	Detent	Inboard Flap Main/Aft	Outboard Flap Main/Aft
	0	0°/0°	0°
	1	7.07°/15.36°	7.04°
	2	10.11°/16.62°	10.06°
	3	20.20°/19.18°	19.99°
	4	20.20°/19.18°	19.99°
	5	20.20°/19.18°	19.99°
	Full	37.07°/22.01°	36.49°
			Slat 1/Slat 2,3,&4
			0°/0°
			12°/15°
			12°/15°
			12°/15°
			20°/25°
			20°/25°
			20°/25°

Deflections are in the planes normal to the hinge lines, except for the flaps, which are in stream wise planes normal to the wing reference plane. Deflections of a surface supported by another moveable surface are relative to the parent surface. Stabilizer deflections are relative to the airplane horizontal reference. Elevator and rudder maximum deflections are scheduled by the flight control system as a function of airspeed; the data presented herein correspond to zero airspeed. See AMM for control surface deflection tolerances.

Serial Numbers 19000002, 19000004, 19000006 and subsequent.

**II. Model ERJ 190-100 LR (Transport Category Airplane) approved on September 2, 2005**

Same as model ERJ 190-100 STD, except for the following items:

<u>Maximum Weights</u>	Max Ramp Weight:	111,245 lbf (50,460 kgf)
	Max Takeoff Weight:	110,892 lbf (50,300 kgf)*
		110,230 lbf (50,000 kgf)**
	Max Landing Weight:	94,798 lbf (43,000 kgf)
	Max Zero Fuel Weight:	89,948 lbf (40,800 kgf)

\* Standard Weight or if post-mod SB 190-00-0003 is applied

\*\* If post-mod SB 190-00-0002 is applied

Center of Gravity Limits Refer to AFM No. AFM-1912.

**III. Model ERJ 190-100 IGW (Transport Category Airplane) approved on September 2, 2005**

Same as model ERJ 190-100 LR, except for the following items:

<u>Maximum Weights</u>	Max Ramp Weight:	114,552 lbf (51,960 kgf)
	Max Takeoff Weight:	114,199 lbf (51,800 kgf) *
	Max Takeoff Weight:	101,412 lbf (46,000 kgf) **
	Max Landing Weight:	97,003 lbf (44,000 kgf)
	Max Zero Fuel Weight:	90,169 lbf (40,900 kgf)

\* Standard Weight or if post-mod SB 190-00-0009

\*\* If post-mod SB 190-00-0008

Center of Gravity Limits Refer to AFM No. AFM-1912.

**IV. Model ERJ 190-100 ECJ (Transport Category Airplane) approved on November 7, 2007**

Same as model ERJ 190-100 IGW, except for the following items:

Engines Two General Electric Aircraft Engines (GE) models: CF34-10E7B (Engine Type Certificate E00070EN) (See Note 7) or CF34-10E6 (See Note 13).

Airspeed Limits (I.A.S.)

$V_A$ (Maneuvering)	265 KIAS from sea level increasing linearly to 269 KIAS at 15,000 ft., increasing linearly to 286 KIAS at 25,590 ft and increasing linearly to 295 KIAS at 32,684 ft.
---------------------	---

Maximum Passenger Seating Capacity 19 maximum. Limited by requirement §25.807 (g) Emergency Exits.

<u>Maximum Baggage</u>	Forward Cargo Compartment	0 lb (0 kgf)
	Aft Cargo Compartment	0 lb (0 kgf)

Serial number 19000109 and subsequent.

<u>Maximum Weights</u>	Max Ramp Weight:	120591 lbf (54,700 kgf) - 51,960 kgf (See note 13)
	Max Takeoff Weight:	120,150 lbf (54,500 kgf) – 51,800 kgf (See note 13)
	Max Landing Weight:	100,970 lbf (45,800 kgf) – 44,000 kgf (See note 13)
	Max Zero Fuel Weight:	80,467 lbf (36,500 kgf) – 40,900 kgf (See note 13)

Fuel Capacity Maximum usable fuel: 27 232.0 liters (16 155 liters in wing tanks and 11077.0 liters in auxiliary fuel tanks).  
Maximum usable fuel: 16 152.6 liters( two tanks of 8 076.3 liters)( See note 13)  
Unusable fuel: 165.2 liters (72.1 liters at 0.803 kg/liter in each wing tank and 21 liters in auxiliary tanks).

Unusable fuel: 113.4 liters (56.7 liters at 0.811 kg/liter in each wing tank)(See note 13).

Center of Gravity Limits Refer to AFM No. AFM-1912.

**V. Model ERJ 190-200 STD (Transport Category Airplane) approved on June 20, 2007**

Same as model ERJ 190-100 LR, except for the following items:

Engines Two General Electric Aircraft Engines (GE) models: CF34-10E6, CF34-10E6A1, CF34-10E5, CF34-10E5A1, CF34-10E7. (Engine Type Certificate E00070EN) (See Note 7).

Airspeed Limits (I.A.S.)

$V_A$ (Maneuvering)	253 KIAS from sea level increasing linearly to 288 KIAS at 25,590 ft., and increasing linearly to 295 KIAS at 32,680 ft.
$V_A$ (Maneuvering)	0.82 Mach from 32,680 ft to 41,000 ft.

Datum

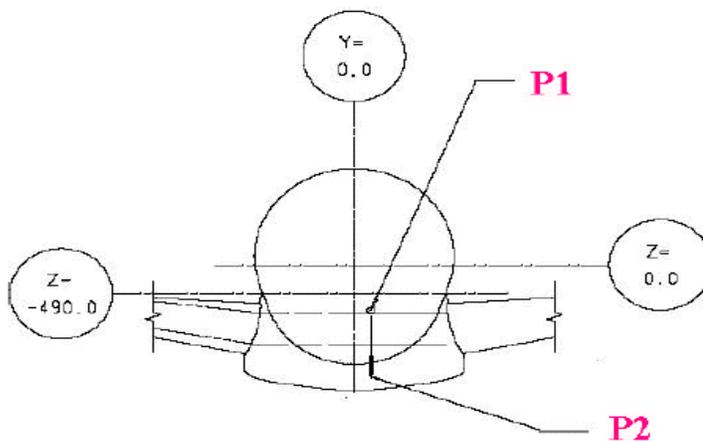
A perpendicular plane to the fuselage centerline, located at 15 256 mm ahead of the wing stub front spar. This spar is located 414 mm ahead of the wing jack points.

Mean Aerodynamic Chord

The MAC length is 3682 mm.

Leveling Means

Plumb line between the points P1 and P2 located inside of the landing gear compartment on the left side, as illustrated below.



LEVELING OF FUSL G COORDINATE POINTS			
POINT	X	Y	Z
P1	18768.00	-250.00	-774.87
P2	18768.00	-250.00	-1683.47

<u>Maximum Weights</u>	Max Ramp Weight:	107,914 lbf (48,950 kgf)
	Max Takeoff Weight:	107562 lbf (48,790 kgf)
	Max Landing Weight:	99206 lbf (45,000 kgf)
	Max Zero Fuel Weight:	93695 lbf (42,500 kgf)

Center of Gravity Limits Refer to AFM No. AFM-1912.

<u>Maximum Baggage</u>	Forward Cargo Compartment	4,189 lb (1,900 kgf)
	Aft Cargo Compartment	3,968 lb (1,800 kgf)

Maximum Passenger Seating Capacity 124 maximum (Note 12).

Serial Numbers 19000005, 19000029 and subsequent.

#### **VI. Model ERJ 190-200 LR (Transport Category Airplane) approved on June 20, 2007**

Same as model ERJ 190-200 STD, except for the following items:

<u>Maximum Weights</u>	Max Ramp Weight:	112,324 lbf (50,950 kgf)
	Max Takeoff Weight:	111,971 lbf (50,790 kgf)*
	Max Landing Weight:	99,206 lbf (45,000 kgf)
	Max Zero Fuel Weight:	93,695 lbf (42,500 kgf)

Center of Gravity Limits Refer to AFM No. AFM-1912.

#### **VII. Model ERJ 190-200 IGW (Transport Category Airplane) approved on June 20, 2007**

Same as model ERJ 190-200 LR, except for the following items:

<u>Maximum Weights</u>	Max Ramp Weight:	115,631 lbf (52,450 kgf)
	Max Takeoff Weight:	115278 lbf (52,290 kgf)
	Max Landing Weight:	100,970 lbf (45,800 kgf)
	Max Zero Fuel Weight:	93,915 lbf (42,600 kgf)

Center of Gravity Limits Refer to AFM No. AFM-1912.

**DATA PERTINENT TO ALL MODELS EXCEPT AS INDICATED****Import Requirements**

To be considered eligible for operation in the United States, each aircraft manufactured under this type certificate must be accompanied by a certificate of airworthiness for export or certifying statement endorsed by the exporting foreign civil airworthiness authority which states (in the English language): The [insert aircraft model and series] covered by this certificate conforms to the type design approved under U.S. Type Certificate No. A57NM, TCDS Revision [insert number], dated [insert date] and is found to be in a condition for safe operation.

**Certification Basis** **14 CFR part 25**, effective February 1, 1965, including the following amendments:

- Amendments 25-1 through 25-101 in entirety;
- Amendment 25-102, §§ 25.981(a) and (b), H25.4 only;
- Amendments 25-103 through 25-105 in entirety;
- Amendment 25-107, § 25.731(d) and (e); § 25.735(a) through (g), and (i) through (k) only;
- Amendments 25-108 through 25-110 in entirety;
- Amendments 25-112 through 25-114 in entirety;
- Amendment 25-117 in entirety; and-
- Amendment 25-120 in entirety.

Note: The ERJ 190-100 ECJ (Commercially Known as Lineage 1000) auxiliary fuel tanks comply with the requirement 25.981(c) of Amendment 25-102.

**Special Conditions:**

No. 25-296-SC, consisting of the following subjects:

- Interaction of Systems and Structure;
- Limit Engine Torque Loads for Sudden Engine Stoppage;
- Control Surface Position Awareness;
- Performance Credit for ATTCS During Go-Around;
- High Intensity Radiated Fields (HIRF); and
- Operations without Normal Electrical Power.

For the ERJ 190-100 ECJ

No. 25-372-SC Multiple Electrical/Electronic equipment bays

No. 25-273-SC Flight Accessible Class C Cargo Compartment

NOTE: The FAA Special Conditions referenced above may be accessed at internet location:

[http://rgl.faa.gov/Regulatory\\_and\\_Guidance\\_Library/rgSC.nsf/MainFrame?OpenFrameSet](http://rgl.faa.gov/Regulatory_and_Guidance_Library/rgSC.nsf/MainFrame?OpenFrameSet)

**Equivalent Level of Safety Findings:**

- § 25.331(c)(2): Pitch Maneuver Conditions (documented in TAD ELOS Memo TC0099IB-T-A-10)
- §§ 25.1301, 25.1309: Equipment, Systems, and Installations (documented in TAD ELOS Memo TC0099IB-T-S-13)
- § 25.933(a)(1)(ii): Flight Critical Thrust Reverser (documented in TAD ELOS Memo TC0099IB-T-P-3 for ERJ 190-100 models and TAD ELOS Memo AT0286IB-T-P-22 for ERJ 190-200 models)
- 14 CFR part 25 subparts E, F, & G requirements applicable to APU installations: APU Certification Rules (documented in TAD ELOS Memo TC0099IB-T-P-4)
- 14 CFR part 25 Appendix I25.4(a): ATTCS - Reduction in initial power setting to less than 90% of takeoff thrust (documented in TAD ELOS Memo TC0099IB-T-F-28)
- 14 CFR part 25 Appendix I25.5(b)(4): ATTCS - Deactivation control (documented in TAD ELOS Memo TC0099IB-T-P-10)
- § 25.1305(c)(3): Digital Only Display of Turbine Engine High/Intermediate Pressure Rotor Speed (documented in TAD ELOS Memo TC0099IB-T-P-18)
- §§ 25.1389(b), 25.1391, 25.1393, 25.1395: Position Light Intensities (documented in TAD ELOS Memo TC0099IB-T-S-34)
- § 25.831(g): Humidity Requirement (documented in TAD ELOS Memo TC0099IB-T-S-36)

- Emergency Exit Locator Sign (documented in TAD ELOS Memo TC0099IB-T-C-9) (See note 10)
- §§ 25.811(d)(1), (2), (3) and 25.812(b)(1), Emergency Exit Sign for the ERJ 190-100 ECJ (documented in TAD ELOS Memo TD0490IB-T-C11)

NOTE: The FAA Equivalent Level of Safety Memos referenced above may be accessed at internet location:

[http://rgl.faa.gov/Regulatory\\_and\\_Guidance\\_Library/rgELOS.nsf/MainFrame?OpenFrameSet](http://rgl.faa.gov/Regulatory_and_Guidance_Library/rgELOS.nsf/MainFrame?OpenFrameSet)

Exemptions:

- Exemption No. 8613, 14 CFR part 25, Section 25.901(c) Uncontrollable High Thrust; and
- Exemption No. 8612, 14 CFR part 25, Section 25.841(a)(2)(i) and (ii) Pressurized Cabin.

For the ERJ 190-100 ECJ

- Exemption No. 9459, 14 CFR part 25, Section 25.785(b) General occupant protection for occupants of multiple-place side-facing seats that are occupied during takeoff and landing;
- Exemption No. 9457, 14 CFR part 25, Section 25.785(j) Firm handhold along each aisle
- Exemption No. 9458, 14 CFR part 25, Section 25.813(e) Prohibits installation of interior doors in between passenger compartments.

The FAA Exemptions referenced above may be accessed at internet location:

[http://rgl.faa.gov/Regulatory\\_and\\_Guidance\\_Library/rgEX.nsf/MainFrame?OpenFrameSet](http://rgl.faa.gov/Regulatory_and_Guidance_Library/rgEX.nsf/MainFrame?OpenFrameSet)

Optional Requirements complied with:

- |                             |  |
|-----------------------------|--|
| - Section 25.801            | Ditching (ERJ190-100 models only);   |
| - Sections 25.1411, 25.1415 | Safety equipment required for ditching certification (ERJ190-100 models only); |
| - Section 25.1403           | Wing icing detection lights;   |
| - Section 25.1419           | Ice protection; and  |
| - Section 25.1421           | Megaphones   |

Part 26 of the Federal Aviation Regulations:

Based on § 21.29(a) for new TCs, or § 21.101(g) for changes to TCs, applicable provisions of part 26 are included in the certification basis.

For any future part 26 amendments, the holder of this TC must demonstrate compliance with the applicable sections.

Environmental Standards complied with:

- FAR Part 36 effective December 1, 1969, including Amendments 36-1 through 36-24;
- FAR Part 34 effective September 10, 1990, including all amendments effective on the TC date.

Equipment

The basic required equipment as prescribed in the applicable airworthiness regulations (see the Certification Basis) must be installed in the aircraft. The lists of all equipment as well as optional approved equipment are contained in the Embraer documents:

- Type Design Standard Document for ERJ 190-100 No. 190-100TDS
- Type Design Standard Document for ERJ 190-200 No. 190-200TDS\_FAA
- Type Design Standard Document for ERJ 190-100 No. 190-100TDS\_ECJ

Airplane Flight Manual

ANAC approved Airplane Flight Manual AFM-1912.

Service Information

Service bulletins, repair instructions (letters, drawings, specifications, forms used for transmitting repair descriptions, etc.), structural repair manuals, airplane flight manuals, vendor manuals, and overhaul and maintenance manuals that are published in the English language and indicate applicability to the U.S. approved type designs included in this Type Certificate and that include a statement "ANAC Approved" are accepted by the FAA and are considered "FAA Approved" (See Note 8). Additionally, changes to type design that are approved by ANAC designated engineering representatives via ANAC form F-200-06 are also considered FAA approved (See Note 8).

**NOTES:**

- NOTE 1:** Weight and balance. Current weight and balance report including a form of weight and list of equipment included in certificated empty weight and loading instructions must be provided for each aircraft at the time of original certification.  
The certificated basic empty weight and corresponding center of gravity location must include the total engine oil, hydraulic fluid and unusable fuel.
- NOTE 2:** The mandatory systems certification maintenance requirements, raised from the safety analysis, are listed in the “Appendix A Part 1 – Certification Maintenance Requirements (CMR)” of the document MRB Report P/N 1928.  
The mandatory structure certification maintenance requirements, raised from the damage tolerance analysis, are listed in the “Appendix A Part 2 - Airworthiness Limitation Inspections (ALI) - Structures” of the document MRB Report P/N 1928.  
The list of the tasks raised from the compliance with the RBHA/FAR 25-981 Amdt. 102 (a) and (b) is provided in the “Appendix A Part 3 – Fuel System Limitation Items (FSL)” of the document MRB Report P/N 1928.  
The list of the life-limited components is provided in the “Appendix A Part 4 – Life - Limited Items (LLI) of the document MRB Report P/N 1928, and MPG 2928 for the ECJ model..  
The Structures Repair Manual SRM-1929 is approved and controlled by ANAC, and all Service Bulletins issued by Embraer are approved by ANAC. The Structures Repair Manual P/N 2773 is applicable to model ERJ 190-100 ECJ. An approval statement is stamped in each Service Bulletin (See Note 8).  
For the ERJ 190-100 ECJ model, the Appendix A (Part 1, 2, 3 and 4) of the Maintenance Planning Guide (MPG-2928) document must be considered as reference for mandatory maintenance requirements mentioned above.
- NOTE 3:** The systems containing User Modifiable Data are:  
- User Partition of the Owner Requirements Table (ORT) of the SATCOM (Satellite Communication System);  
- Airline Modifiable Information (AMI) of the Communication Management Function (CMF);  
- System Setting Data - Airline Operational Data (APM) System Setting Data (Airline Operational Data);  
and  
- User Application of the Aircraft Condition Monitoring Function (ACMF).  
  
User Modifiable Data is not approved as part of the type design.
- NOTE 4:** Any new interior configuration affecting the cockpit door access area, including adjacent structures such as galleys and wardrobes, must be submitted for FAA Aircraft Certification Office (ACO) approval, specifically for compliance with 14 CFR 25.809(b). FAA ACO's should coordinate any such changes with the TC issuing office (ANM-116).
- NOTE 5:** The Model ERJ 190-100 xx and ERJ 190-200 xx are often referred to in Embraer marketing literature as the “Embraer 190 xx” and Embraer 195 xx respectively, with the appropriate model (LR, STD, etc.) substituted for the “xx”. These names are strictly marketing designations and are not part of the official model designations. The exceptions to this rule are the Models ERJ 190-100 IGW and ERJ 190-200 IGW, which have been given the marketing designation Embraer 190 AR and Embraer 195 AR respectively.  
The ERJ 190-100 ECJ model is frequently mentioned in Embraer publicity literature as “Lineage1000”.
- NOTE 6:** As stated in Exemption No. 8613 (ERJ 190) the FAA has concluded that the occurrence of any uncontrollable high thrust failure condition or any of the associated causal failures listed below, are reportable under §§ 121.703 (c), 125.409 (c), and 135.415(c):  
- FADEC – Full Authority Digital Engine Control  
- TCQ – Thrust Control Quadrant  
- FMU – Fuel Metering Unit
- NOTE 7:** The CF34-10E engines configuration, according to the designation presented in the Engine Parts List, must follow the suffix Gxx. For the ERJ 190-100 models, the following designation list is approved for operation (mixing of different engine configurations on the same airplane is permitted for the listed trios only):  
– CF34-10E6G03, CF34-10E6G05 and CF34-10E6G07

- CF34-10E6A1G03, CF34-10E6A1G05 and CF34-10E6A1G07
- CF34-10E5G03, CF34-10E5G05 and CF34-10E5G07
- CF34-10E5A1G03, CF34-10E5A1G05 and CF34-10E5A1G07
- CF34-10E7-BG03, CF34-10E7-BG05 e CF34-10E7-BG07.

For the ERJ 190-200 models, the following designation list is approved for operation (mixing of different engine configurations on the same airplane is permitted for the listed pairs only):

- CF34-10E6G03 and CF34-10E6G05
- CF34-10E6A1G03 and CF34-10E6A1G05
- CF34-10E5G03 and CF34-10E5G05
- CF34-10E5A1G03 and CF34-10E5A1G05
- CF34-10E7G03 and CF34-10E7G05.

Engine configuration part numbers ECP 2041M42P02, -P06, -P08, and -P09 are not permitted on any ERJ 190 CF34-10E engines configuration.

NOTE 8.

The "Agência Nacional de Aviação Civil" - ANAC (National Agency of Civil Aviation) took over responsibility for Brazilian civil aircraft certification on 21 March 2006. Approvals made prior to that date will reference the CTA as the responsible Brazilian aviation authority.

NOTE 9.

For the ERJ 190-100 ECJ model the compliance requirements of cabin safety will be demonstrated on interior installation and certification of aircraft.

NOTE 10.

Emergency Exit Locator Sign ELOS is not applicable for ERJ 190-100 ECJ.

NOTE 11.

The type design reliability and performance of the Model 190-100 STD, -100 LR and -100 IGW airplanes have been approved in accordance with Appendix K to 14 CFR 25 and found suitable for extended operations (ETOPS) when operated and maintained in accordance with the ERJ 190 Configuration, Maintenance and Procedures (CMP) document CMP-2925. For the Model 190-100 ECJ the ERJ 190 Configuration, Maintenance and Procedures (CMP) document CMP-2852. This finding does not constitute approval to conduct ETOPS operations.

NOTE 12.

For the ERJ 190-200 model the maximum passenger limit is a total of 124 passengers with a maximum of 68 passengers seats located aft of the centerline of the overwing exits.

NOTE 13.

Data applicable only to airplanes S/N 19000109 to 19000225 without SB190LIN-28-0011 incorporated.

...END..