



Engine Model AE3007A Limits

Operating Conditions	Static Thrust (lb.)		Rotor Speed (%)		Temperature Interturbine (°C)
	-1000ft	SL	N1	N2	ITT
Takeoff	7,593	7,457	100 <sup>(2)</sup>	102.5(N2 <sup>3</sup> )	921 <sup>(1)</sup> (1690° F)
Maximum Continuous	6,851	6,725	100	102.5	868 (1600° F)
Ground				53.6 (min), 102.5 (max)	
Starting					800 (1472° F)

(1) Time limited to 5 minutes.

(2) 100 % N1 =8,700 rpm

(3) 102.5 % N2 = 16,270 rpm

Oil Temperature

Maximum: 126°C (260°F)

Normal oil temperature range: 21°C to 126°C (70 at 260°F)

Minimum temperature for starting: above -40°C (-40°F) for lubrication oil specified by MIL-L-23699  
above -54°C (-65°F) for lubrication oil specified by MIL-L-7808

Minimum to increase N2 above 83%: 40°C (104°F)

Oil Pressure

Maximum: 95 psig - This limit may be exceeded during starts if oil temperature is below 21°C.

For takeoff and go-around the maximum limit is 115 psi, limited to 5 minutes.

For aircraft which have complied with SBAE30071-79-025 or equivalent, the maximum limit for takeoff and go around is 155 PSI, limited to 2 minutes.

Minimum: 48 psig (N2 equal or above 88%)

34 psig (N2 below 88%)

APU Limits (both models)

Maximum RPM: 108%

Maximum EGT: Steady State (Time limited to 5 minutes) 1323°F (717° C)  
Running (Normal) 1256°F (680° C)

Airspeed Limits (EAS)

Maximum Operating Limit Speed  $V_{MO}$ :

- 0 to 8,000 ft: 250 KEAS  
- 10,000 to 26,300 ft: 320 KEAS  
- 26,300 to 37,000 ft: 0.78 Mach  
- (Linear variation from 8,000 to 10,000 ft.)

Maneuvering speed ( $V_A$ ): 200 KEAS

Maximum flap extended speed ( $V_{FE}$ ):

- Flaps 9° (Takeoff/Approach): 250 KEAS  
- Flaps 22°: 200 KEAS  
- Flaps 45° (Landing) : 145 KEAS

Maximum landing gear extended speed ( $V_{LE}$ ): 250 KEAS

Maximum landing gear operating speed ( $V_{LO}$ ):

-  $V_{LO}$  for retraction 200 KEAS  
-  $V_{LO}$  for extension 250 KEAS

C.G Limits

(landing gear extended)

592.4 to 623.3 inches (15.6% to 43% MAC) with 42,549 lbs. (19,300 kg).  
 592.4 to 623.3 inches (15.6% to 43% MAC) with 42,328 lbs. (19,200 kg).  
 588.3 to 623.3 inches (12% to 43% MAC) with 34,171 lbs. (15,500 kg).  
 588.3 to 623.3 inches (12% to 43% MAC) with 28,660 lbs. (13,000 kg).  
 619.9 inches (40% MAC) with 26,455 lbs. (12,000 kg).

Straight linear variation between the points given.

Moment due to landing gear retraction - 10,155 in-lbs. (-117 kgf-m)  
 (the aircraft C.G. is moved forward with the retraction).

Maximum Weights

Ramp	42,549 lbs. (19,300 kgf)
Takeoff	42,328 lbs. (19,200 kgf)
Landing	41,226 lbs. (18,700 kgf)
Zero fuel	37,698 lb (17,100 kgf)

Maximum Baggage

2,646 lb (1,200 kg)

Fuel Capacity

1373.8 gallons (two tanks, 686.9 gallons each at +603.6 inches).  
 Unusable fuel of 14.3 gallons (7.15 gallons for each tank).

Serial Numbers Eligible

145004 and subsequent. A Brazilian Certificate of Airworthiness for Export endorsed as noted under "Import Requirements" must be submitted for each individual aircraft for which application for U.S. certification is made.

**2. - Model EMB-145ER, (Transport Category), Approved December 10, 1996**Engine

Two – Rolls Royce Corporation (See Note 16.)  
 Model AE 3007A, AE3007A1/1, AE3007A1/2, AE3007A1, or Model AE3007A1P  
 (See Note 12 for engine intermix operation.)

Fuel

Brazilian Specification CNP-08/QAV1.  
 ASTM Specification D-1655 JET A or JET A1  
 MIL-T-83133A JP-8.

APU

Sundstrand Aerospace Model T-62T-40C11 or T-62T-40C14  
 Limitations as stated in Sundstrand Doc. No. ESR 0921 and No. ESR 1112

Oil

Engine: MIL-L-7808 or MIL-L-23699  
 APU: MIL-L-23699 or MIL-L-7808

Engine Models AE3007A and AE3007A1/1 Limits

Operating Conditions	Static Thrust (lb.)	Rotor Speed (%)		Temperature Interturbine (°C)
		N1	N2	
	-1000ft			ITT
Takeoff	7,580	100 <sup>(2)</sup>	102.5 <sup>(3)</sup>	921 <sup>(1)</sup> (1690° F)
Maximum Continuous	6,820	100	102.5	868 (1600° F)
Ground			53.6 (min), 102.5 (max)	
Starting				800 (1472° F)

(1) Time limited to 5 minutes.

(2) 100 % N1 = 8,700 rpm

(3) 102.5 % N2 = 16,270 rpm

Engine Models AE3007A1/2 and AE3007A1 Limits

Operating Conditions	Static Thrust (lb.)	Rotor Speed (%)		Temperature Interturbine (°C)
		N1	N2	
	-1000ft	N1	N2	ITT
Takeoff	7,580	100 <sup>(2)</sup>	102.5 <sup>(3)</sup>	948 <sup>(1)</sup> (1738° F)
Maximum Continuous	6,820	100	102.5	901 (1653° F)
Ground			53.6 (min), 102.5 (max)	
Starting				800 (1472° F)

(1) Time limited to 5 minutes.

(2) 100% N1 = 8,700 rpm

(3) 102.5 % N2 =16,270 rpm

Engine Model AE3007A1P Limits

Operating Conditions	Static Thrust (lb.)		Rotor Speed (%)		Temperature Interturbine (°C)
		SL	N1	N2	
	-1000ft	SL	N1	N2	ITT
Takeoff	8,338	8,195	100 <sup>(2)</sup>	102.5 <sup>(3)</sup>	948 <sup>(1)</sup> (1738° F)
Maximum Continuous	6,852	6,759	100	102.5 <sup>(3)</sup>	901 (1653° F)
Ground				53.6 (min), 102.5 (max)	
Starting					800 (1472° F)

(1) Time limited to 5 minutes.

(2) 100 % N1 =8,700 rpm

(3) 102.5 % N2 = 16,270 rpm

Oil Temperature

Maximum: 126°C (260°F)

Normal oil temperature range: 21°C to 126°C (70 at 260°F)

Minimum temperature for starting: above -40°C (-40°F) for lubrication oil specified by MIL-L-23699  
above -54°C (-65°F) for lubrication oil specified by MIL-L-7808

Minimum to increase N2 above 83%: 40°C (104°F)

Oil Pressure

Maximum: 95 psig (This limit may be exceeded during starts if oil temperature is below 21°C (70°F))  
(for Airplanes with engine FADEC software previous to version B7.6 installed).

110 psig (This limit may be exceeded during starts if oil temperature is below 21°C (70°F))  
(for Airplanes with engine FADEC software version B7.6 or later approved version installed).

For takeoff and go-around the maximum limit is 115 psi, limited to 5 minutes.

For aircraft which have complied with SBAE 30071-79-025 or equivalent, the maximum limit for takeoff and go around is 155 PSI, limited to 2 minutes.

Minimum: 48 psig (N2 equal or above 88%)

34 psig (N2 below 88%)

APU Limits (both models)

Maximum RPM: 108%

Maximum EGT: Steady State (Time limited to 5 minutes) 1323°F (717° C)  
Running (Normal) 1256°F (680° C)

Airspeed Limits (EAS)

Maximum Operating Limit Speed  $V_{MO}$ :

- 0 to 8,000 ft:

250 KEAS

- 10,000 to 26,300 ft:

320 KEAS

- 26,300 to 37,000 ft:

0.78 Mach

- (Linear variation from 8,000 to 10,000 ft.)

Maneuvering speed ( $V_A$ ):	200 KEAS
Maximum flap extended speed ( $V_{FE}$ ):	
– Flaps 9° (Takeoff/Approach):	250 KEAS
– Flaps 18° (Takeoff)	200 KEAS (See Note 15)
– Flaps 22°:	200 KEAS
– Flaps 45° (Landing) :	145 KEAS
Maximum landing gear extended speed ( $V_{LE}$ ):	250 KEAS
Maximum landing gear operating speed ( $V_{LO}$ ):	
- $V_{LO}$ for retraction	200 KEAS
- $V_{LO}$ for extension	250 KEAS

C. G. Limits

(landing gear extended)	594.0 to 623.3 inches (17% to 43% MAC) with 45,635 lbs. (20,700 kg).
	594.0 to 623.3 inches (17% to 43% MAC) with 45,414 lbs. (20,600 kg).
	588.3 to 623.3 inches (12% to 43% MAC) with 34,171 lbs. (15,500 kg).
	588.3 to 623.3 inches (12% to 43% MAC) with 28,660 lbs. (13,000 kg).
	619.9 inches (40% MAC) with 26,455 lbs. (12,000 kg).

Straight linear variation between the points given.

Moment due to landing gear retraction - 10,155 in-lbs. (-117 kgf-m)  
(the aircraft C.G. is moved forward with the retraction).

<u>Maximum Weights</u>	Ramp	45,635 lbs. (20,700 kgf)
	Takeoff	45,414 lbs. (20,600 kgf)
	Landing	41,226 lbs. (18,700 kgf)
	Zero fuel	37,698 lbs. (17,100 kgf)

Maximum Baggage 2,646 lbs. (1,200 kg)

Fuel Capacity 1373.8 gallons (two tanks, 686.9 gallons each at +603.6 inches).  
Unusable fuel of 14.3 gallons (7.15 gallons for each tank).

Serial Numbers Eligible 145004 and subsequent. A Brazilian Certificate of Airworthiness for Export endorsed as noted under "Import Requirements" must be submitted for each individual aircraft which application for U.S. certification is made.

**3. - Model EMB-145MR, (Transport Category), Approved May 7, 1998**

<u>Engine</u>	Two – Rolls Royce Corporation (See Note 16.) Model AE 3007A1/1, AE 3007A1/2, AE3007A1 or AE3007A1P
<u>Fuel</u>	Brazilian Specification CNP-08/QAV1. ASTM Specification D-1655 JET A or JET A1 MIL-T-83133A JP-8.
<u>APU</u>	Sundstrand Aerospace Model T-62T-40C11 or T-62T-40C14 Limitations as stated in Sundstrand Doc. No. ESR 0921 and No. ESR 1112
<u>Oil</u>	Engine: MIL-L-7808 or MIL-L-23699 APU: MIL-L-23699 or MIL-L-7808

Engine Model AE3007A1/1 Limits

Operating Conditions	Static Thrust (lb.)	Rotor Speed (%)		Temperature Interturbine (°C)
		N1	N2	ITT
	-1000ft			
Takeoff	7,580	100 <sup>(2)</sup>	102.5 <sup>(3)</sup>	921 <sup>(1)</sup> (1690° F)
Maximum Continuous	6,820	100	102.5	868 (1605° F)
Ground			53.6 (min), 102.5 (max)	
Starting				800 (1472° F)

(1) Time limited to 5 minutes.

(2) 100 % N1 =8,700 rpm

(3) 102.5 % N2 = 16,270 rpm

Engine Models AE3007A1/2 and AE3007A1 Limits

Operating Conditions	Static Thrust (lb.)	Rotor Speed (%)		Temperature Interturbine (°C)
		N1	N2	ITT
	-1000ft			
Takeoff	7,580	100 <sup>(2)</sup>	102.5 <sup>(3)</sup>	948 <sup>(1)</sup> (1738° F)
Maximum Continuous	6,820	100	102.5	901 (1653° F)
Ground			53.6 (min), 102.5 (max)	
Starting				800 (1472° F)

(1) Time limited to 5 minutes.

(2) 100 % N1 =8,700 rpm

(3) 102.5 % N2 = 16,270 rpm

Engine Model AE3007A1P Limits

Operating Conditions	Static Thrust (lb.)	Rotor Speed (%)		Temperature Interturbine (°C)
		N1	N2	ITT
	-1000ft			
Takeoff	8,338	100 <sup>(2)</sup>	102.5 <sup>(3)</sup>	948 <sup>(1)</sup> (1738° F)
Maximum Continuous	6,852	100	102.5 <sup>(3)</sup>	901 (1653° F)
Ground			53.6 (min), 102.5 (max)	
Starting				800 (1472° F)

(1) Time limited to 5 minutes.

(2) 100 % N1 =8,700 rpm

(3) 102.5 % N2 = 16,270 rpm

Oil Temperature

Maximum: 126°C (260°F)

Normal oil temperature range: 21°C to 126°C (70 at 260°F)

Minimum temperature for starting: above -40°C (-40°F) for lubrication oil specified by MIL-L-23699  
above -54°C (-65°F) for lubrication oil specified by MIL-L-7808

Minimum to increase N2 above 83%: 40°C (104°F)

Oil Pressure

Maximum: 95 psig (This limit may be exceeded during starts if oil temperature is below 21°C (70°F))  
(for Airplanes with engine FADEC software previous to version B7.6 installed).  
110 psig (This limit may be exceeded during starts if oil temperature is below 21°C (70°F))  
(for Airplanes with engine FADEC software version B7.6 or later approved version installed).

For takeoff and go-around the maximum limit is 115 psi, limited to 5 minutes.

For aircraft which have complied with SBAE 30071-79-025 or equivalent, the maximum limit for takeoff and go around is 155 PSI, limited to 2 minutes.

Minimum: 48 psig (N2 equal or above 88%)

34 psig (N2 below 88%)

APU Limits (both models)

Maximum RPM:	108%
Maximum EGT:	Steady State (Time limited to 5 minutes) 1323°F (717° C) Running (Normal) 1256°F (680° C)

Airspeed Limits (EAS)

Maximum Operating Limit Speed $V_{MO}$ :	
- 0 to 8,000 ft:	250 KEAS
- 10,000 to 26,300 ft:	320 KEAS
- 26,300 to 37,000 ft:	0.78 Mach
- (Linear variation from 8,000 to 10,000 ft.)	
Maneuvering speed ( $V_A$ ):	202 KEAS
Maximum flap extended speed ( $V_{FE}$ ):	
- Flaps 9° (Takeoff/Approach):	250 KEAS
- Flaps 18° (Takeoff)	200 KEAS (See Note 15)
- Flaps 22°:	200 KEAS
- Flaps 45° (Landing) :	145 KEAS
Maximum landing gear extended speed ( $V_{LE}$ ):	250 KEAS
Maximum landing gear operating speed ( $V_{LO}$ ):	
- $V_{LO}$ for retraction	200 KEAS
- $V_{LO}$ for extension	250 KEAS

C. G. Limits

(landing gear extended)

595.6 to 619.4 inches (18.4% to 39.5% MAC) with 48,721 lbs. (22,100 kg).  
 595.6 to 619.4 inches (18.4% to 39.5% MAC) with 48,501 lbs. (22,000 kg).  
 592.5 to 619.4 inches (15.7% to 39.5% MAC) with 42,549 lbs. (19,300 kg).  
 590.1 to 623.3 inches (13.6% to 43.0% MAC) with 37,698 lbs. (17,100 kg).  
 588.3 to 623.3 inches (12.0% to 43.0% MAC) with 34,171 lbs. (15,500 kg).  
 588.3 to 623.3 inches (12.0% to 43.0% MAC) with 29,541 lbs. (13,400 kg).  
 608.6 inches (30% MAC) with 27,337 lbs. (12,400 kg).  
 Straight linear variation between the points given.

Moment due to landing gear retraction - 10,763 in-lbs. (-124 kgf-m)  
 (the aircraft C.G. is moved forward with the retraction).

Maximum Weights

Ramp	48,721 lbs. (22,100 kgf)
Takeoff	48,501 lbs. (22,000 kgf)
Landing	42,549 lbs. (19,300 kgf)
Zero fuel	39,462 lbs. (17,900 kgf)

Maximum Baggage

2,646 lbs. (1,200 kg)

Fuel Capacity

1373.8 gallons (two tanks, 686.9 gallons each at +603.6 inches).  
 Unusable fuel of 14.3 gallons (7.15 gallons for each tank).

Serial Numbers Eligible

145048 and subsequent. A Brazilian Certificate of Airworthiness for Export endorsed as noted under "Import Requirements" must be submitted for each individual aircraft for which application for U.S. certification is made.

**4. - Model EMB-145LR, (Transport Category), Approved May 7, 1998**

<u>Engine</u>	Two – Rolls Royce Corporation (See Note 16.) Model AE 3007A1/1, AE 3007A1/2, AE3007A1 or AE3007A1P
<u>Fuel</u>	Brazilian Specification CNP-08/QAV1. ASTM Specification D-1655 JET A or JET A1 MIL-T-83133A JP-8.
<u>APU</u>	Sundstrand Aerospace Model T-62T-40C11 or T-62T-40C14 Limitations as stated in Sundstrand Doc. No. ESR 0921 and No. ESR 1112
<u>Oil</u>	Engine: MIL-L-7808 or MIL-L-23699  APU: MIL-L-23699 or MIL-L-7808

Engine Model AE3007A1/1 Limits

Operating Conditions	Static Thrust (lb.)	Rotor Speed (%)		Temperature Interturbine (°C)
		N1	N2	
	-1000ft			ITT
Takeoff	7,580	100 <sup>(2)</sup>	102.5 <sup>(3)</sup>	921 <sup>(1)</sup> (1690° F)
Maximum Continuous	6,820	100	102.5	868 (1605° F)
Ground			53.6 (min), 102.5 (max)	
Starting				800 (1472° F)

- (1) Time limited to 5 minutes.  
(2) 100 % N1 =8,700 rpm  
(3) 102.5 % N2 = 16,270 rpm

Engine Models AE3007A1/2 and AE3007A1 Limits

Operating Conditions	Static Thrust (lb.)	Rotor Speed (%)		Temperature Interturbine (°C)
		N1	N2	
	-1000ft			ITT
Takeoff	7,580	100 <sup>(2)</sup>	102.5 <sup>(3)</sup>	948 <sup>(1)</sup> (1738° F)
Maximum Continuous	6,820	100	102.5	901 (1653° F)
Ground			53.6 (min), 102.5 (max)	
Starting				800 (1472° F)

- (1) Time limited to 5 minutes.  
(2) 100 % N1 =8,700 rpm  
(3) 102.5 % N2 = 16,270 rpm

Engine Model AE3007A1P Limits

Operating Conditions	Static Thrust (lb.)	Rotor Speed (%)		Temperature Interturbine (°C)
		N1	N2	
	-1000ft			ITT
Takeoff	8,338	100 <sup>(2)</sup>	102.5 <sup>(3)</sup>	948 <sup>(1)</sup> (1738° F)
Maximum Continuous	6,852	100	102.5 <sup>(3)</sup>	901 (1653° F)
Ground			53.6 (min), 102.5 (max)	
Starting				800 (1472° F)

- (1) Time limited to 5 minutes.  
(2) 100 % N1 =8,700 rpm  
(3) 102.5 % N2 = 16,270 rpm

Oil Temperature

Maximum: 126°C (260°F)  
 Normal oil temperature range: 21°C at 126°C (70 at 260°F)  
 Minimum temperature for starting: above -40°C (-40°F) for lubrication oil specified by MIL-L-23699  
 above -54°C (-65°F) for lubrication oil specified by MIL-L-7808

Minimum to increase N2 above 83%: 40°C (104°F)

Oil Pressure

Maximum: 95 psig (This limit may be exceeded during starts if oil temperature is below 21°C (70°F))  
 (for Airplanes with engine FADEC software previous to version B7.6 installed).  
 110 psig (This limit may be exceeded during starts if oil temperature is below 21°C (70°F))  
 (for Airplanes with engine FADEC software version B7.6 or later approved  
 version installed).  
 For takeoff and go-around the maximum limit is 115 psi, limited to 5 minutes.  
 For aircraft which have complied with SBAE 30071-79-025 or equivalent, the maximum  
 limit for takeoff and go around is 155 PSI, limited to 2 minutes.

Minimum: 48 psig (N2 equal or above 88%)  
 34 psig (N2 below 88%)

APU Limits (both models)

Maximum RPM: 108%  
 Maximum EGT: Steady State (Time limited to 5 minutes) 1323°F (717° C)  
 Running (Normal) 1256°F (680° C)

Airspeed Limits (EAS)

Maximum Operating Limit Speed  $V_{MO}$ :

- 0 to 8,000 ft:	250 KEAS
- 10,000 to 26,300 ft:	320 KEAS
- 26,300 to 37,000 ft:	0.78 Mach
- (Linear variation from 8,000 to 10,000 ft.)	
Maneuvering speed ( $V_A$ ):	202 KEAS

Maximum flap extended speed ( $V_{FE}$ ):

- Flaps 9° (Takeoff/Approach):	250 KEAS
- Flaps 18° ( Takeoff)	200 KEAS (See Note 15)
- Flaps 22°:	200 KEAS
- Flaps 45° (Landing) :	145 KEAS

Maximum landing gear extended speed ( $V_{LE}$ ): 250 KEAS

Maximum landing gear operating speed ( $V_{LO}$ ):

- $V_{LO}$ for retraction	200 KEAS
- $V_{LO}$ for extension	250 KEAS

C. G. Limits

(landing gear extended)

595.6 to 619.4 inches (18.4% to 39.5% MAC) with 48,721 lbs. (22,100 kg).  
 595.6 to 619.4 inches (18.4% to 39.5% MAC) with 48,501 lbs. (22,000 kg).  
 592.5 to 619.4 inches (15.7% to 39.5% MAC) with 42,549 lbs. (19,300 kg).  
 590.1 to 623.3 inches (13.6% to 43.0% MAC) with 37,698 lbs. (17,100 kg).  
 588.3 to 623.3 inches (12.0% to 43.0% MAC) with 34,171 lbs. (15,500 kg).  
 588.3 to 623.3 inches (12.0% to 43.0% MAC) with 29,541 lbs. (13,400 kg).  
 608.6 inches (30% MAC) with 27,337 lbs. (12,400 kg).

For aircraft modified according to SB 145-00-0032

595.6 to 619.4 inches (19.0% to 38.5% MAC) with 50,044 lbs. (22,700 kg).  
 595.6 to 619.4 inches (19.0% to 38.5% MAC) with 49,824 lbs. (22,600 kg).  
 592.5 to 619.4 inches (15.7% to 39.5% MAC) with 42,549 lbs. (19,300 kg).  
 590.2 to 623.3 inches (13.6% to 43.0% MAC) with 37,698 lbs. (17,100 kg).  
 588.3 to 623.3 inches (12.0% to 43.0% MAC) with 34,171 lbs. (15,500 kg).  
 588.3 to 623.3 inches (12.0% to 43.0% MAC) with 29,541 lbs. (13,400 kg).  
 608.6 inches (30% MAC) with 27,337 lbs. (12,400 kg).

Straight linear variation between the points given.

Moment due to landing gear retraction - 10,763 in-lbs. (-124 kgf-m)  
 (the aircraft C.G. is moved forward with the retraction).

Maximum Weights

Ramp	48,721 lbs.	(22,100 kgf)
Takeoff	48,501 lbs.	(22,000 kgf)
Landing	42,549 lbs.	(19,300 kgf)
Zero fuel	39,462 lbs.	(17,900 kgf)

For aircraft modified according to SB 145-00-0032

Ramp	50,044 lbs.	(22,700 kgf)
Takeoff	49,824 lbs.	(22,600 kgf)
Landing	43,651 lbs.	(19,800 kgf)
Zero fuel	40,565 lbs.	(17,900 kgf)

Maximum Baggage 2,646 lbs. (1,200 kg)

Fuel Capacity 1701.4 gallons (two tanks, 850.7 gallons each at +596.6 inches).  
 Unusable fuel of 11.6 gallons (5.8 gallons for each tank).

Serial Numbers Eligible 145002, 145003, 145048 and subsequent. A Brazilian Certificate of Airworthiness for Export endorsed as noted under "Import Requirements" must be submitted for each individual aircraft for which application for U.S. certification is made.

#### **5. - Model EMB-135ER, (Transport Category), Approved July 15, 1999**

Engine Two – Rolls Royce Corporation (See Note 16.)  
 Models: AE 3007A1/3 or AE 3007A3

Fuel Brazilian Specification CNP-08/QAV1.  
 ASTM Specification D-1655 JET A or JET A1  
 MIL-T-83133A JP-8.

APU Sundstrand Aerospace Model T-62T-40C11 or T-62T-40C14  
 Limitations as stated in Sundstrand Doc. No. ESR 0921 and No. ESR 1112

Oil Engine: MIL-L-7808 or MIL-L-23699  
 APU: MIL-L-23699 or MIL-L-7808

#### **Engine Model AE3007A1/3 Limits**

Operating Conditions	Static Thrust (lb.)		Rotor Speed (%)		Temperature Interturbine (°C)
	-1000ft	SL	N1	N2	ITT
Takeoff	7,580	7,462	100 <sup>(2)</sup>	102.5 <sup>(3)</sup>	948 <sup>(1)</sup> (1738° F)
Maximum Continuous	6,820	6,760	100	102.5	901 (1653° F)
Ground				53.6 (min), 102.5 (max)	
Starting					800 (1472° F)

(1) Time limited to 5 minutes.

(2) 100 % N1 = 8,700 rpm

(3) 102.5 % N2 = 16,270 rpm

Oil Temperature

Maximum: 126°C (260°F)  
 Normal oil temperature range: 21°C to 126°C (70 to 260°F)  
 Minimum temperature for starting: above -40°C (-40°F) for lubrication oil specified by MIL-L-3699  
 above -54°C (-65°F) for lubrication oil specified by MIL-L-7808

Minimum to increase N2 above 83%: 40°C (104°F)

Oil Pressure

Maximum: 95 psig (This limit may be exceeded during starts if oil temperature is below 21°C (70°F))  
 (for Airplanes with engine FADEC software previous to version B7.6 installed).  
 110 psig (This limit may be exceeded during starts if oil temperature is below 21°C (70°F))  
 (for Airplanes with engine FADEC software version B7.6 or later approved  
 version installed).  
 For takeoff and go-around the maximum limit is 115 psi, limited to 5 minutes.  
 For aircraft which have complied with SBAE 30071-79-025 or equivalent, the maximum  
 limit for takeoff and go around is 155 PSI, limited to 2 minutes.  
 Minimum: 48 psig (N2 equal or above 88%)  
 34 psig (N2 below 88%)

APU Limits (both models)

Maximum RPM: 108%  
 Maximum EGT: Steady State (Time limited to 5 minutes) 1323°F (717° C)  
 Running (Normal) 1256°F (680° C)

Airspeed Limits (EAS)

Maximum Operating Limit Speed $V_{MO}$ :	
- 0 to 8,000 ft:	250 KEAS
- 10,000 to 26,300 ft:	320 KEAS
- 26,300 to 37,000 ft:	0.78 Mach
- (Linear variation from 8,000 to 10,000 ft.)	
Maneuvering speed ( $V_A$ ):	202 KEAS
Maximum flap extended speed ( $V_{FE}$ ):	
– Flaps 9° (Takeoff/Approach):	250 KEAS
– Flaps 18° (Takeoff)	200 KEAS (See Note 15)
– Flaps 22°:	200 KEAS
– Flaps 45° (Landing) :	145 KEAS
Maximum landing gear extended speed ( $V_{LE}$ ):	250 KEAS
Maximum landing gear operating speed ( $V_{LO}$ ):	
- $V_{LO}$ for retraction	200 KEAS
- $V_{LO}$ for extension	250 KEAS

C. G. Limits

(landing gear extended)

518.4 to 538.7 inches (20.0% to 38.0% MAC) with 42,107 lbs. (19,100 kg).  
 518.4 to 538.7 inches (20.0% to 38.0% MAC) with 41,887 lbs. (19,000 kg).  
 517.7 to 538.7 inches (19.4% to 38.0% MAC) with 40,789 lbs. (18,500 kg).  
 514.7 to 538.7 inches (16.7% to 38.0% MAC) with 34,391 lbs. (15,600 kg).  
 512.7 to 538.7 inches (15.0% to 38.0% MAC) with 31,996 lbs. (14,500 kg).  
 512.7 to 538.7 inches (15.0% to 38.0% MAC) with 27,557 lbs. (12,500 kg).  
 521.2 to 538.7 inches (22.5% to 38.0% MAC) with 26,455 lbs. (12,000 kg).  
 529.7 inches (30% MAC) with 25,353 lbs. (11,500 kg).

Straight linear variation between the points given.

Moment due to landing gear retraction -10,155 in-lbs. (-117 kgf-m)  
(the aircraft C.G. is moved forward with the retraction).

<u>Maximum Weights</u>	Ramp	42,108 lbs. (19,100 kgf)
	Takeoff	41,887 lbs. (19,000 kgf)
	Landing	40,785 lbs. (18,500 kgf)
	Zero fuel	34,392 lbs. (15,600 kgf)

Maximum Baggage 2,205 lbs. (1,000 kg)

Fuel Capacity 1373.8 gallons (two tanks, 686.9 gallons each at +524.4 inches).  
Unusable fuel of 13.3 gallons (6.6 gallons for each tank).

Serial Numbers Eligible 145145 and subsequent. A Brazilian Certificate of Airworthiness for Export endorsed as noted under "Import Requirements" must be submitted for each individual aircraft for which application for U.S. certification is made.

#### **6. - Model EMB-135LR, (Transport Category), Approved July 15, 1999**

Engine Two – Rolls Royce Corporation (See Note 16.)  
Models: AE 3007A1/3 or AE 3007A3

Fuel Brazilian Specification CNP-08/QAV1.  
ASTM Specification D-1655 JET A or JET A1  
MIL-T-83133A JP-8.

APU Sundstrand Aerospace Model T-62T-40C11 or T-62T-40C14  
Limitations as stated in Sundstrand Doc. No. ESR 0921 and No. ESR 1112

Oil Engine: MIL-L-7808 or MIL-L-23699  
APU: MIL-L-23699 or MIL-L-7808

#### Engine Model AE3007A1/3 Limits

Operating Conditions	Static Thrust (lb.)	Rotor Speed (%)		Temperature Interturbine (°C)
		N1	N2	
	-1000ft	N1	N2	ITT
Takeoff	7,580	100 <sup>(2)</sup>	102.5 <sup>(3)</sup>	948 <sup>(1)</sup> (1738° F)
Maximum Continuous	6,820	100	102.5	901 (1653° F)
Ground			53.6 (min), 102.5 (max)	
Starting				800 (1472° F)

(1) Time limited to 5 minutes.

(2) 100 % N1 =8,700 rpm

(3) 102.5 % N2 = 16,270 rpm

#### Oil Temperature

Maximum: 126°C (260°F)

Normal oil temperature range: 21°C to 126°C (70 to 260°F)

Minimum temperature for starting: above -40°C (-40°F) for lubrication oil specified by MIL-L-23699  
above -54°C (-65°F) for lubrication oil specified by MIL-L-7808

Minimum to increase N2 above 83%: 40°C (104°F)

Oil Pressure

Maximum:	95 psig (This limit may be exceeded during starts if oil temperature is below 21°C (70°F)) (for Airplanes with engine FADEC software previous to version B7.6 installed). 110 psig (This limit may be exceeded during starts if oil temperature is below 21°C (70°F)) (for Airplanes with engine FADEC software version B7.6 or later approved version installed).
	For takeoff and go-around the maximum limit is 115 psi, limited to 5 minutes. For aircraft which have complied with SBAE 30071-79-025 or equivalent, the maximum limit for takeoff and go around is 155 PSI, limited to 2 minutes.
Minimum:	48 psig (N2 equal or above 88%) 34 psig (N2 below 88%)

APU Limits

(both models)	Maximum RPM:	108%
	Maximum EGT:	Steady State (Time limited to 5 minutes) 1323°F (717° C)
	Running (Normal)	1256°F (680° C)

Airspeed Limits (EAS)

Maximum Operating Limit Speed $V_{MO}$ :	
- 0 to 8,000 ft:	250 KEAS
- 10,000 to 26,300 ft:	320 KEAS
- 26,300 to 37,000 ft:	0.78 Mach
- (Linear variation from 8,000 to 10,000 ft.)	
Maneuvering speed ( $V_A$ ):	202 KEAS
Maximum flap extended speed ( $V_{FE}$ ):	
- Flaps 9° (Takeoff/Approach):	250 KEAS
- Flaps 18° (Takeoff)	200 KEAS (See Note 15)
- Flaps 22°:	200 KEAS
- Flaps 45° (Landing) :	145 KEAS
Maximum landing gear extended speed ( $V_{LE}$ ):	250 KEAS
Maximum landing gear operating speed ( $V_{LO}$ ):	
- $V_{LO}$ for retraction	200 KEAS
- $V_{LO}$ for extension	250 KEAS

C. G. Limits

(landing gear extended)	519.7 to 538.7 inches (21.1% to 38.0% MAC) with 44,312 lbs. (20,100 kg).
	519.6 to 538.7 inches (21.1% to 38.0% MAC) with 44,092 lbs. (20,000 kg).
	517.7 to 538.7 inches (19.4% to 38.0% MAC) with 40,789 lbs. (18,500 kg).
	514.7 to 538.7 inches (16.7% to 38.0% MAC) with 35,273 lbs. (16,000 kg).
	512.7 to 538.7 inches (15.0% to 38.0% MAC) with 31,966 lbs. (14,500 kg).
	512.7 to 538.7 inches (15.0% to 38.0% MAC) with 27,557 lbs. (12,500 kg).
	521.2 to 538.7 inches (22.5% to 38.0% MAC) with 26,455 lbs. (12,000 kg).
	529.7 inches (30% MAC) with 25,352 lbs. (11,500 kg).

Straight linear variation between the points given.

Moment due to landing gear retraction - 10,155 in-lbs. (-117 kgf-m)  
(the aircraft C.G. is moved forward with the retraction)

Maximum Weights

Ramp	44,312 lbs. (20,100 kgf)
Takeoff	44,092 lbs. (20,000 kgf)
Landing	40,785 lbs. (18,500 kgf)
Zero fuel	35,274 lbs. (16,000 kgf)

<u>Maximum Baggage</u>	2,205 lbs. (1,000 kg)
<u>Fuel Capacity</u>	1701.4 gallons (two tanks, 850.7 gallons each at +517.6 inches). Unusable fuel of 10.8 gallons (5.4 gallons for each tank).
<u>Serial Numbers Eligible</u>	145145 and subsequent. A Brazilian Certificate of Airworthiness for Export endorsed as noted under "Import Requirements" must be submitted for each individual aircraft for which application for U.S. certification is made.

**7. - Model EMB-135KE, (ERJ-140ER), (Transport Category), Approved July 26, 2001.**

<u>Engine</u>	Two – Rolls Royce Corporation (See Note 16.) Model: AE 3007A1/3
<u>Fuel</u>	Brazilian Specification CNP-08/QAV1. ASTM Specification D-1655 JET A or JET A1 MIL-T-83133A JP-8.
<u>APU</u>	Sundstrand Aerospace Model T-62-T-40C11 or T-62T-40C14 Limitations as stated in Sundstrand Doc. No. ESR 0921 and No. ESR 1112
<u>Oil</u>	Engine: MIL-L-7808 or MIL-L-23699  APU: MIL-L-7808 or MIL-L-23699

Engine Model AE3007A1/3 Limits

Operating Conditions	Static Thrust (lb.)	Rotor Speed (%)		Temperature Interturbine (°C)
		N1	N2	
	-1000ft			ITT
Takeoff	7,580	100 <sup>(2)</sup>	102.5 <sup>(3)</sup>	948 <sup>(1)</sup> (1738° F)
Maximum Continuous	6,820	100	102.5	901 (1653° F)
Ground			53.6 (min), 102.5 (max)	
Starting				800 (1472° F)

(1) Time limited to 5 minutes.

(2) 100 % N1 = 8,700 rpm

(3) 102.5 % N2 = 16,270 rpm

Oil Temperature

Maximum:	126°C (260°F)
Normal oil temperature range:	21°C to 126°C (70 to 260°F)
Minimum temperature for starting:	above -40°C (-40°F) for lubrication oil specified by MIL-L-23699 above -54°C (-65°F) for lubrication oil specified by MIL-L-7808
Minimum to increase N2 above 83%:	40°C (104°F)

Oil Pressure

Maximum:	95 psig (This limit may be exceeded during starts if oil temperature is below 21°C (70°F)) (for Airplanes with engine FADEC software previous to version B7.6 installed). 110 psig (This limit may be exceeded during starts if oil temperature is below 21°C (70°F)) (for Airplanes with engine FADEC software version B7.6 or later approved version installed). For takeoff and go-around the maximum limit is 115 psi, limited to 5 minutes. For aircraft which have complied with SBAE 30071-79-025 or equivalent, the maximum limit for takeoff and go around is 155 PSI, limited to 2 minutes.
Minimum:	48 psig (N2 equal or above 88%) 34 psig (N2 below 88%)

APU Limits (both models)

Maximum RPM:	108%
Maximum EGT:	Steady State (Time limited to 5 minutes) 1323°F (717° C)
	Running (Normal) 1256°F (680° C)

Airspeed Limits (EAS)

Maximum Operating Limit Speed $V_{MO}$ :	
- 0 to 8,000 ft:	250 KEAS
- 10,000 to 26,300 ft:	320 KEAS
- 26,300 to 37,000 ft:	0.78 Mach
- (Linear variation from 8,000 to 10,000 ft.)	
Maneuvering speed ( $V_A$ ):	202 KEAS
Maximum flap extended speed ( $V_{FE}$ ):	
– Flaps 9° (Takeoff/Approach):	250 KEAS
– Flaps 18° (Takeoff)	200 KEAS
– Flaps 22°:	200 KEAS
– Flaps 45° (Landing):	145 KEAS
Maximum landing gear extended speed ( $V_{LE}$ ):	250 KEAS
Maximum landing gear operating speed ( $V_{LO}$ ):	
- $V_{LO}$ for retraction	200 KEAS
- $V_{LO}$ for extension	250 KEAS

C. G. Limits

(landing gear extended)	529.2 to 582.2 inches (18.2% to 38.5% MAC) with 44,532 lbs. (20,200 kg).
	529.2 to 582.2 inches (18.2% to 38.5% MAC) with 44,312 lbs. (20,100 kg).
	558.5 to 582.2 inches (17.5% to 38.5% MAC) with 42,548 lbs. (19,300 kg).
	556.5 to 585.0 inches (15.7% to 41.0% MAC) with 37,699 lbs. (17,100 kg).
	554.5 to 585.0 inches (14.0% to 41.0% MAC) with 33,068 lbs. (15,000 kg).
	554.5 to 585.0 inches (14.0% to 41.0% MAC) with 28,659 lbs. (13,000 kg).
	572.5 inches (30% MAC) with 26,445 lbs. (12,000 kg).

Straight linear variation between the points given.

Moment due to landing gear retraction - 10,155 in-lbs. (-117 kgf-m)  
(the aircraft C.G. is moved forward with the retraction).

Maximum Weights

Ramp	44,532 lbs. (20,200 kgf)
Takeoff	44,312 lbs. (20,100 kgf)
Landing	41,225 lbs. (18,700 kgf)
Zero fuel	37,698 lbs. (17,100 kgf)

Maximum Baggage

2,646 lbs. (1,200 kg)

Fuel Capacity

1373.8 gallons (two tanks, 686.9 gallons each at +567.5 inches).  
Unusable fuel of 14.4 gallons (7.2 gallons for each tank).

Serial Numbers Eligible

145425 and subsequent. A Brazilian Certificate of Airworthiness for Export endorsed as noted under "Import Requirements" must be submitted for each individual aircraft for which application for U.S. certification is made.

**8. - Model EMB-135KL, (ERJ-140LR), (Transport Category), Approved July 26, 2001.**

<u>Engine</u>	Two – Rolls Royce Corporation (See Note 16.) Model: AE 3007A1/3
<u>Fuel</u>	Brazilian Specification CNP-08/QAV1. ASTM Specification D-1655 JET A or JET A1 MIL-T-83133A JP-8.
<u>APU</u>	Sundstrand Aerospace Model T-62-T-40C11 or T-62T-40C14 Limitations as stated in Sundstrand Doc. No. ESR 0921 and No. ESR 1112
<u>Oil</u>	Engine: MIL-L-7808 or MIL-L-23699  APU: MIL-L-7808 or MIL-L-23699

Engine Model AE3007A1/3 Limits

Operating Conditions	Static Thrust (lb.)	Rotor Speed (%)		Temperature Interturbine (°C)
		N1	N2	
	-1000ft			ITT
Takeoff	7,580	100 <sup>(2)</sup>	102.5 <sup>(3)</sup>	948 <sup>(1)</sup> (1738° F)
Maximum Continuous	6,820	100	102.5	901 (1653° F)
Ground			53.6 (min), 102.5 (max)	
Starting				800 (1472° F)

(1) Time limited to 5 minutes.

(2) 100 % N1 =8,700 rpm

(3) 102.5 % N2 = 16,270 rpm

Oil Temperature

Maximum:	126°C (260°F)
Normal oil temperature range:	21°C to 126°C (70 to 260°F)
Minimum temperature for starting:	above -40°C (-40°F) for lubrication oil specified by MIL-L-23699 above -54°C (-65°F) for lubrication oil specified by MIL-L-7808
Minimum to increase N2 above 83%:	40°C (104°F)

Oil Pressure

Maximum:	95 psig (This limit may be exceeded during starts if oil temperature is below 21°C (70°F)) (for Airplanes with engine FADEC software previous to version B7.6 installed). 110 psig (This limit may be exceed during starts if oil temperature is below 21°C (70°F)) (for Airplanes with engine FADEC software version B7.6 or later approved version installed). For takeoff and go-around the maximum limit is 115 psi, limited to 5 minutes. For aircraft which have complied with SBAE 30071-79-025 or equivalent, the maximum limit for takeoff and go around is 155 PSI, limited to 2 minutes.
Minimum:	48 psig (N2 equal or above 88%) 34 psig (N2 below 88%)

APU Limits (both models)

Maximum RPM:	108%
Maximum EGT:	Steady State (Time limited to 5 minutes) 1323°F (717° C) Running (Normal) 1256°F (680° C)

Airspeed Limits (EAS)

Maximum Operating Limit Speed $V_{MO}$ :	
- 0 to 8,000 ft:	250 KEAS
- 10,000 to 26,300 ft:	320 KEAS
- 26,300 to 37,000 ft:	0.78 Mach
- (Linear variation from 8,000 to 10,000 ft.)	

Maneuvering speed ( $V_A$ ):	202 KEAS
Maximum flap extended speed ( $V_{FE}$ ):	
– Flaps 9° (Takeoff/Approach):	250 KEAS
– Flaps 18° (Takeoff)	200 KEAS
– Flaps 22°:	200 KEAS
– Flaps 45° (Landing) :	145 KEAS
Maximum landing gear extended speed ( $V_{LE}$ ):	250 KEAS
Maximum landing gear operating speed ( $V_{LO}$ ):	
- $V_{LO}$ for retraction	200 KEAS
- $V_{LO}$ for extension	250 KEAS

C. G. Limits

(landing gear extended)	560.1 to 582.2 inches (19.0% to 38.5% MAC) with 46,737 lbs. (21,200 kg).
	560.1 to 581.8 inches (19.0% to 38.5% MAC) with 46,516 lbs. (21,100 kg).
	558.5 to 582.2 inches (17.5% to 38.5% MAC) with 42,548 lbs. (19,300 kg).
	556.5 to 585.0 inches (15.7% to 41.0% MAC) with 37,699 lbs. (17,100 kg).
	554.5 to 585.0 inches (14.0% to 41.0% MAC) with 33,068 lbs. (15,000 kg).
	554.5 to 585.0 inches (14.0% to 41.0% MAC) with 28,659 lbs. (13,000 kg).
	572.5 inches (30% MAC) with 26,445 lbs. (12,000 kg).

Straight linear variation between the points given.

Moment due to landing gear retraction - 10,155 in-lbs. (-117 kgf-m)  
(the aircraft C.G. is moved forward with the retraction).

<u>Maximum Weights</u>	Ramp	46,737 lbs. (21,200 kgf)
	Takeoff	46,516 lbs. (21,100 kgf)
	Landing	41,225 lbs. (18,700 kgf)
	Zero fuel	37,698 lbs. (17,100 kgf)

Maximum Baggage 2,646 lbs. (1,200 kg)

Fuel Capacity 1707.5 gallons (two tanks, 853.75 gallons each at +560.5 inches).  
Unusable fuel of 11.7 gallons (5.85 gallons for each tank).

Serial Numbers Eligible 145425 and subsequent. A Brazilian Certificate of Airworthiness for Export endorsed as noted under "Import Requirements" must be submitted for each individual aircraft for which application for U.S. certification is made.

**9. - Model EMB-135BJ – This model has two unique configurations, Legacy 600 and Legacy 650****9(a) Legacy 600, (Transport Category), Approved August 23, 2002.**

<u>Engine</u>	Two – Rolls Royce Corporation (See Note 16.) Model: AE 3007A1P
For S/N 145625 and on	Two – Rolls Royce Corporation (See Note 16.) Model: AE 3007A1E
<u>Fuel</u>	Brazilian Specification CNP-08/QAV1. ASTM Specification D-1655 JET A or JET A1 MIL-T-83133A JP-8.
<u>APU</u>	Sundstrand Aerospace Model T-62-T-40C14 Limitations as stated in Sundstrand Doc. No. ESR 1112
<u>Oil</u>	Engine: MIL-L-7808 or MIL-L-23699

APU: MIL-L-7808 or MIL-L-23699

Engine Model AE3007A1P Limits

Operating Conditions	Static Thrust (lb.)		Rotor Speed (%)		Temperature Interturbine (°C)
	-1000ft	SL	N1	N2	ITT
Takeoff	8,338	8,195	100 <sup>(2)</sup>	102.5 <sup>(3)</sup>	948 <sup>(1)</sup> (1738° F)
Maximum Continuous	6,852	6,759	100	102.5	901 (1653° F)
Ground				57 (min), 102.5 (max)	
Starting					800 (1472° F)

- (1) Time limited to 5 minutes.  
(2) 100 % N1 =8,700 rpm  
(3) 102.5 % N2 = 16,270 rpm

Engine Model AE3007A1E Limits

Operating Conditions	Static Thrust (lb.)		Rotor Speed (%)		Temperature Interturbine (°C)
	-1000ft	SL	N1	N2	ITT
Takeoff	8,895	8,765	100 <sup>(2)</sup>	103.8 <sup>(3)</sup>	970 <sup>(1)(6)</sup> (1778° F)
Maximum Continuous	7,354	7,222	100	102.5	935 (1715° F)
Ground				57 (min), 103.8 (max)	
Starting				56 <sup>(5)</sup> (max)	800 <sup>(4)</sup> (1472° F)

- (1) Time limited to 5 minutes.  
(2) 100 % N1 =8,700 rpm  
(3) 103.8 % N2 = 16,470 rpm  
(4) ITT limit may be exceeded for up to 5 seconds to maximum temperature of 850 °C  
(5) Verify N2 speed is less than 56% prior to initiating any start attempt  
(6) ITT limit may be exceeded for up to 90 seconds to maximum temperature of 970°C

Oil Temperature

Maximum: 126°C (260°F)  
Normal oil temperature range: 21°C to 126°C (70 to 260°F)  
Minimum temperature for starting: above -40°C (-40°F) for lubrication oil specified by MIL-L-23699  
above -54°C (-65°F) for lubrication oil specified by MIL-L-7808  
Minimum to increase N2 above 83%: 40°C (104°F)

Oil Pressure

Maximum: 95 psig (This limit may be exceeded during starts if oil temperature is below 21°C (70°F))  
(for Airplanes with engine FADEC software previous to version B7.6 installed).  
110 psig (This limit may be exceeded during starts if oil temperature is below 21°C (70°F))  
(for Airplanes with engine FADEC software version B7.6 or later approved version installed).  
For aircraft which have complied with SBAE 3007A-79-025 or equivalent, the maximum limit for takeoff and go around is 155 PSI, limited to 2 minutes.  
Minimum: 50 psig (N2 equal or above 88%)  
34 psig (N2 below 88%)

APU Limits

Maximum RPM: 104%  
Maximum EGT: Steady State (Time limited to 5 minutes) 1323°F (717° C)  
Running (Normal) 1256°F (680° C)

Airspeed Limits (EAS)

Maximum Operating Limit Speed  $V_{MO}$ :  
- 0 to 8,000 ft: 250 KEAS  
- 10,000 to 27,625 ft: 320 KEAS  
- 27,625 to 41,000 ft: 0.80 Mach  
- (Linear variation from 8,000 to 10,000 ft).

Maneuvering speed ( $V_A$ ):	200 KEAS
Maximum flap extended speed ( $V_{FE}$ ):	
– Flaps 9° (Takeoff/Approach):	250 KEAS
– Flaps 22° (Approach/Landing)	200 KEAS
– Flaps 22° (Approach/Landing) in icing conditions and yaw damper off:	180 KEAS
– Flaps 45° (Landing):	145 KEAS
Maximum landing gear extended speed ( $V_{LE}$ ):	250 KEAS
Maximum landing gear operating speed ( $V_{LO}$ ):	
- $V_{LO}$ for retraction	200 KEAS
- $V_{LO}$ for extension	250 KEAS

C. G. Limits

(Landing Gear Extended) 526.1 to 535.3 inches (26.9% to 35% MAC) with 49,097 lbs. (22,270 kg).  
526.1 to 535.3 inches (26.9% to 35% MAC) with 48,943 lbs. (22,200 kg).  
517.6 to 535.3 inches (19.3% to 35% MAC) with 40,786 lbs. (18,500 kg).  
512.7 to 535.3 inches (15.0% to 35% MAC) with 31,967 lbs. (14,500 kg).  
512.7 to 535.3 inches (15.0% to 35% MAC) with 30,864 lbs. (14,000 kg).  
521.2 to 535.3 inches (25.3% to 35% MAC) with 29,350 lbs. (13,313 kg).  
529.6 inches (30% MAC) with 28,660 lbs. (13,000 kg).

For S/N 145625 and on 515.4 to 535.3 inches (27.5% to 35% MAC) with 49,758 lbs. (22,570 kg).  
515.4 to 535.3 inches (27.5% to 35% MAC) with 49,604 lbs. (22,500 kg).  
517.6 to 535.3 inches (19.3% to 35% MAC) with 40,786 lbs. (18,500 kg).  
512.7 to 535.3 inches (15.0% to 35% MAC) with 31,967 lbs. (14,500 kg).  
512.7 to 535.3 inches (15.0% to 35% MAC) with 30,864 lbs. (14,000 kg).  
521.2 to 535.3 inches (25.3% to 35% MAC) with 29,350 lbs. (13,313 kg).  
529.6 inches (30% MAC) with 28,660 lbs. (13,000 kg).

Straight linear variation between the points given.

Moment due to landing gear retraction - 10,155 in-lbs. (-117 kgf-m)  
(the aircraft C.G. is moved forward with the retraction).

Maximum Weights

Ramp	49,097 lbs. (22,270 kgf)
Takeoff	48,943 lbs. (22,200 kgf)
Landing	40,786 lbs. (18,500 kgf)
Zero fuel	35,274 lbs. (16,000 kgf)

For S/N 145625 and on	Ramp	49,758 lbs. (22,570 kgf)
	Takeoff	49,604 lbs. (22,500 kgf)
	Landing	40,786 lbs. (18,500 kgf)
	Zero fuel	35,274 lbs. (16,000 kgf)

Maximum Baggage

1,001 lbs. (454 kg)

Fuel Capacity

2682 gallons (two forward fuselage tanks of 278.97 gallons each at +332.28 inches, two wing tanks of 844.9 gallons each at +517.6 inches and two aft tanks of 217.15 gallons each at +798.94 inches).

Unusable fuel of 28 gallons (forward tanks 7.13 gallons, wing tanks 11.62 gallons and aft tanks 9.25 gallons).

For S/N 145625 and on	2711,64 gallons (two forward fuselage tanks of 294 gallons each at +332.28 inches, two wing tanks of 844.9 gallons each at +517.6 inches and two aft tanks of 217 gallons each at +798.94 inches).
	Unusable fuel of 28 gallons (forward tanks 7.13 gallons, wing tanks 11.62 gallons and aft tanks 9.25 gallons).

Serial Numbers Eligible 145412, 145462 and subsequent. A Brazilian Certificate of Airworthiness for Export endorsed as noted under "Import Requirements" must be submitted for each individual aircraft for which application for U.S. certification is made.

**9(b) Legacy 650 (Transport Category), Approved February 18, 2011:**

Engine Two – Rolls Royce Corporation (See Note 16.)  
Model: AE 3007A2

Fuel Brazilian Specification CNP-08/QAV1.  
ASTM Specification D-1655 JET A or JET A1  
MIL-T-83133A JP-8.

APU Sundstrand Aerospace Model T-62-T-40C14  
Limitations as stated in Sundstrand Doc. No. ESR 1112

Oil Engine: MIL-L-7808 or MIL-L-23699  
APU: MIL-L-7808 or MIL-L-23699

Engine Model AE3007A2 Limits

Operating Conditions	Static Thrust (lb.)		Rotor Speed (%)		Temperature Interturbine (°C)
	-1000ft	SL	N1	N2	ITT
Takeoff	9,320	9,278	97,7 <sup>(2)</sup>	105.0 <sup>(4)</sup>	970°C (steady state condition) ) <sup>(1)</sup> (1778° F)
Maximum Continuous	7,990	7,970	97,7	105.0	937 (1718° F)
Ground					
Starting					800 (1472° F) <sup>(3)</sup>

(1) Time limited to 5 minutes (including the transient allowance).

(2) 100 % N1 = 8,700 rpm

(3) During starts in-flight, the ITT limit of 800°C may be exceeded for up to 5 seconds to a maximum temperature of 850°C.

(4) 102.5 % N2 = 16,270 rpm

Oil pressure

- upper limit

Oil temperature above 21°C: 110 psig (steady state) (5) (6)  
155 psig (transient) 2 minutes

- lower limit

N2 above 88% and oil temperature above 21°C: 48 psig (7)  
N2 between idle and 88% and oil temperature above 21°C: 34 psig

Oil temperature

- upper limit (continuous operation): 126 °C  
- lower limit (continuous operation): 21 °C  
- start limit: -40 °C (8)

Fuel temperature

- upper limit: 57 °C  
- lower limit: -53 °C

LP spool vibration

- continuous operation: 1.8 ips (9)  
- transient: 2.5 ips

## HP spool vibration

- continuous operation: 1.1 ips (9)
- transient: 2.5 ips

- (5) May be exceeded during starts if oil temperature is below 21°C. The engine must remain at IDLE until the oil pressure is less than 110 psig. Reference: CSP 30017
- (6) Operation in oil pressure amber range is permitted between 111 and 115 psi in all operational modes time limited to 5 minutes, or between 116 and 155 psi in all operational modes time limited to 2 minutes. Total time above 110 psi may not exceed 5 minutes. Reference: CSP 30017
- (7) While this is an abnormal condition, operation between 48 and 34 psi is permitted during takeoff and go-around phases. Reference: CSP 30017
- (8) Ensure oil temperature is above -40°F (-40°C) before attempting a start when using MIL-PRF-23699F type oil, and above -65°F (-53°C) when using MIL-PRF-7808L type oil.
- (9) Vibration in the amber range below 2.5 IPS is time limited to 5 minutes during the takeoff or go-around phases or 10 seconds during the remainder flight phases. Reference: ECM AE 2428-G and CSP 30017

APU Limits

- Maximum RPM: 104%
- Maximum EGT: Steady State (Time limited to 5 minutes) 1323°F (717° C)
- Running (Normal) 1256°F (680° C)

Airspeed Limits (EAS)

- Maximum Operating Limit Speed  $V_{MO}$ :
  - 0 to 8,000 ft: 300 KEAS
  - 10,000 to 27,625 ft: 320 KEAS
  - 27,625 to 41,000 ft: 0.80 Mach
  - (Linear variation from 8,000 to 10,000 ft).
- Maneuvering speed ( $V_A$ ): 200 KEAS
- Maximum flap extended speed ( $V_{FE}$ ):
  - Flaps 9° (Takeoff/Approach): 250 KEAS
  - Flaps 22° (Approach/Landing): 200 KEAS
  - Flaps 22° (Approach/Landing) in icing conditions and yaw damper off: 180 KEAS
  - Flaps 45° (Landing): 160 KEAS
- Maximum landing gear extended speed ( $V_{LE}$ ): 250 KEAS
- Maximum landing gear operating speed ( $V_{LO}$ ):
  - $V_{LO}$  for retraction: 200 KEAS
  - $V_{LO}$  for extension: 250 KEAS

Center of Gravity Limitations:

<b>3.- C.G. VARIATIONS LIMITS, IN VARIOUS LOADING CONDITIONS ACCORDING TO SPECIFICATIONS:</b>	
<b>3.1 - For Take-off and Landing conditions:</b>	
- From 28,2 % to 38,0 % MAC for weight equal to:	53572 (lbf)
- From 23,5 % to 38,0 % MAC for weight equal to:	44092 (lbf)
- From 21,0 % to 38,0 % MAC for weights equal or less than:	39070 (lbf)
- 21,0 % MAC for weight equal to:	30865 (lbf)
- 30,0 % MAC for weight equal to:	28660 (lbf)
- 38,0 % MAC for weight equal to:	29762 (lbf)
<b>3.2 - For Flight conditions:</b>	
- From 28,2 % to 38,0 % MAC for weight equal to:	53572 (lbf)
- From 22,1 % to 38,0 % MAC for weight equal to:	44092 (lbf)
- From 19,0 % to 38,0 % MAC for weights equal or less than:	39070 (lbf)
- 19,0 % MAC for weight equal to:	30864 (lbf)
- 30,0 % MAC for weight equal to:	28660 (lbf)

- 38,0 % MAC for weight equal to:	29762 (lbf)
-----------------------------------	-------------

<u>Maximum Weights</u>	Ramp	53726 lbs. (24,370 kgf)
	Takeoff	53572 lbs. (24,300 kgf)
	Landing	44092 lbs. (20,000 kgf)
	Zero fuel	36155 lbs. (16,400 kgf)
<u>Maximum Baggage</u>		1,001 lbs. (454 kg)
<u>Fuel Capacity</u>		3071,1 gallons (two forward fuselage tanks of 293.9 gallons each at +332.28 inches, two wing tanks of 888,8 gallons each at +517.6 inches, two aft tanks of 218,78 gallons each at +798.94 inches) and one ventral tank of 268 gallons. Unusable fuel of 44 gallons (forward tanks 6 gallons, wing tanks 25,62 gallons, aft tanks 5,8 gallons) and 6,65gallons of ventral tank.
<u>Serial Numbers Eligible</u>		1451115 and subsequent. A Brazilian Certificate of Airworthiness for Export endorsed as noted under "Import Requirements" must be submitted for each individual aircraft for which application for U.S. certification is made.

#### **10. - Model EMB-145XR (Transport Category), Approved October 22, 2002**

<u>Engine</u>	Two – Rolls Royce Corporation (See Note 16.) Model: AE 3007A1E
<u>Fuel</u>	Brazilian Specification CNP-08/QAV1. ASTM Specification D-1655 JET A or JET A1 MIL-T-83133A JP-8.
<u>APU</u>	Sundstrand Aerospace Model T-62-T-40C11 or T-62T-40C14 Limitations as stated in Sundstrand Doc. No. ESR 0921 and No. ESR 1112
<u>Oil</u>	Engine: MIL-L-7808 or MIL-L-23699  APU: MIL-L-7808 or MIL-L-23699

#### Engine Model AE3007A1E Limits

Operating Conditions	Static Thrust (lb.)		Rotor Speed (%)		Temperature Interturbine (°C)
	-1000ft	SL	N1	N2	ITT
Takeoff	8,895	8,765	100 <sup>(2)</sup>	103.8 <sup>(3)</sup>	970 <sup>(1)(6)</sup> (1778° F)
Maximum Continuous	7,354	7,222	100	102.5	935 (1715° F)
Ground				57 (min), 103.8 (max)	
Starting				56 <sup>(5)</sup> (max)	800 <sup>(4)</sup> (1472° F)

(1) Time limited to 5 minutes.

(2) 100 % N1 =8,700 rpm

(3) 103.8 % N2 = 16,470 rpm

(4) ITT limit may be exceeded for up to 5 seconds to maximum temperature of 850 °C

(5) Verify N2 speed is less than 56% prior to initiating any start attempt

(6) ITT limit may be exceeded for up to 90 seconds to maximum temperature from 971°C to 992°C.

#### Oil Temperature

Maximum:	126°C (260°F)
Normal oil temperature range:	21°C to 126°C (70 to 260°F)
Minimum temperature for starting:	above -40°C (-40°F) for lubrication oil specified by MIL-L-23699 above -54°C (-65°F) for lubrication oil specified by MIL-L-7808
Minimum to increase N2 above 83%:	40°C (104°F)

#### Oil Pressure

- Maximum: 95 psig (This limit may be exceeded during starts if oil temperature is below 21°C (70°F))  
(for Airplanes with engine FADEC software previous to version B7.6 installed).  
110 psig (This limit may be exceeded during starts if oil temperature is below 21°C (70°F))  
(for Airplanes with engine FADEC software version B7.6 or later approved  
version installed).  
For takeoff and go-around the maximum limit is 155 psi, limited to 2 minutes.
- Minimum: 50 psig (N2 equal or above 88%)  
34 psig (N2 below 88%)

APU Limits

- Maximum RPM: 108%
- Maximum EGT: Steady State (Time limited to 5 minutes) 1323°F (717° C)  
Running (Normal) 1256°F (680° C)

Airspeed Limits (EAS)

- Maximum Operating Limit Speed  $V_{MO}$  (Airplanes Pre-Mod. SB 145-31-0038):
- |   |           |
|---|-----------|
| - 0 to 8,000 ft:                              | 250 KEAS  |
| - 10,000 to 26,300 ft:                        | 320 KEAS  |
| - 26,300 to 37,000 ft:                        | 0.78 Mach |
| - (Linear variation from 8,000 to 10,000 ft.) |           |

- Maximum Operating Limit Speed  $V_{MO}$  (Airplanes Post-Mod. SB 145-31-0038 or with an equivalent  
modification factory incorporated):
- |   |           |
|---|-----------|
| - 0 to 8,000 ft:                              | 300 KEAS  |
| - 10,000 to 27,625 ft:                        | 320 KEAS  |
| - 27,625 to 37,000 ft:                        | 0.80 Mach |
| - (Linear variation from 8,000 to 10,000 ft.) |           |

- Maneuvering speed ( $V_A$ ): 200 KEAS

Maximum flap extended speed ( $V_{FE}$ ):

- |   |          |
|---|----------|
| - Flaps 9° (Takeoff/Approach):          | 250 KEAS |
| - Flaps 18° (Takeoff/Approach):         | 200 KEAS |
| - Flaps 22° (Takeoff /Approach/Landing) | 200 KEAS |
| - Flaps 45° (Landing):                  | 160 KEAS |

- Maximum landing gear extended speed ( $V_{LE}$ ): 250 KEAS
- Maximum landing gear operating speed ( $V_{LO}$ ):
- |                           |          |
|---------------------------|----------|
| - $V_{LO}$ for retraction | 200 KEAS |
| - $V_{LO}$ for extension  | 250 KEAS |

C. G. Limits

- (Landing Gear Extended) 597.8 to 617.7 inches (20.4% to 38.0% MAC) with 53,351 lbs. (24,200 kg).  
597.8 to 617.7 inches (20.4% to 38.0% MAC) with 53,131 lbs. (24,100 kg).  
588.4 to 623.3 inches (12.0% to 43.0% MAC) with 34,172 lbs. (15,500 kg).  
588.4 to 623.3 inches (12.0% to 43.0% MAC) with 34,424 lbs. (13,800 kg).  
609.2 inches (30.5% MAC) with 28,219 lbs. (12,800 kg).

Straight linear variation between the points given.

Moment due to landing gear retraction - 10,155 in-lbs. (-117 kgf-m)  
(the aircraft C.G. is moved forward with the retraction).

<u>Maximum Weights</u>	Ramp	53,351 lbs. (24,200 kgf)
	Takeoff	53,131 lbs. (24,100 kgf)
	Landing	44,092 lbs. (20,000 kgf)
	Zero fuel	40,785 lbs. (18,500 kgf)
<u>Maximum Baggage</u>	2,646 lbs. (1200 kg)	
<u>Fuel Capacity</u>	1965.1 gallons (one ventral tank of 273.5 gallons and two wing tanks of 844.9 gallons each at +560.5 inches). Unusable fuel of 14.7 gallons (ventral tank 3.1 gallons and wing tanks 11.6gallons).	
<u>Serial Numbers Eligible</u>	145590 and subsequent. A Brazilian Certificate of Airworthiness for Export endorsed as noted under "Import Requirements" must be submitted for each individual aircraft for which application for U.S. certification is made.	

### **11. - Model EMB-145MP, (Transport Category), Approved July 3, 2003**

<u>Engine</u>	Two – Rolls Royce Corporation (See Note 16.) Model AE 3007A, AE3007A1/1, AE3007A1/2, AE3007A1, or Model AE3007A1P	
<u>Fuel</u>	Brazilian Specification CNP-08/QAV1. ASTM Specification D-1655 JET A or JET A1 MIL-T-83133A JP-8.	
<u>APU</u>	Sundstrand Aerospace Model T-62T-40C11 or T-62T-40C14 Limitations as stated in Sundstrand Doc. No. ESR 0921 and No. ESR 1112	
<u>Oil</u>	Engine:	MIL-L-7808 or MIL-L-23699
	APU:	MIL-L-23699 or MIL-L-7808

#### Engine Models AE3007A and AE3007A1/1 Limits

Operating Conditions	Static Thrust (lb.)	Rotor Speed (%)		Temperature Interturbine (°C)
		N1	N2	ITT
Takeoff	7,580	100 <sup>(2)</sup>	102.5 <sup>(3)</sup>	921 <sup>(1)</sup> (1690° F)
Maximum Continuous	6,820	100	102.5	868 (1600° F)
Ground			53.6 (min), 102.5 (max)	
Starting				800 (1472° F)

(1) Time limited to 5 minutes.

(2) 100 % N1 = 8,700 rpm

(3) 102.5 % N2 = 16,270 rpm

#### Engine Models AE3007A1/2 and AE3007A1 Limits

Operating Conditions	Static Thrust (lb.)	Rotor Speed (%)		Temperature Interturbine (°C)
		N1	N2	ITT
Takeoff	7,580	100 <sup>(2)</sup>	102.5 <sup>(3)</sup>	948 <sup>(1)</sup> (1738° F)
Maximum Continuous	6,820	100	102.5	901 (1653° F)
Ground			53.6 (min), 102.5 (max)	
Starting				800 (1472° F)

(1) Time limited to 5 minutes.

(2) 100% N1 = 8,700 rpm

(3) 102.5 % N2 = 16,270 rpm

#### Engine Model AE3007A1P Limits

Operating Conditions	Static Thrust (lb.)	Rotor Speed (%)		Temperature Interturbine (°C)
		N1	N2	ITT
	-1000ft			

Takeoff	8,338	100 <sup>(2)</sup>	102.5 <sup>(3)</sup>	948 <sup>(1)</sup> (1738° F)
Maximum Continuous	6,852	100	102.5 <sup>(3)</sup>	901 (1653° F)
Ground			53.6 (min), 102.5 (max)	
Starting				800 (1472° F)

(1) Time limited to 5 minutes.

(2) 100 % N1 =8,700 rpm

(3) 102.5 % N2 = 16,270 rpm

#### Oil Temperature

Maximum: 126°C (260°F)  
 Normal oil temperature range: 21°C to 126°C (70 at 260°F)  
 Minimum temperature for starting: above -40°C (-40°F) for lubrication oil specified by MIL-L-23699  
 above -54°C (-65°F) for lubrication oil specified by MIL-L-7808

Minimum to increase N2 above 83%: 40°C (104°F)

#### Oil Pressure

Maximum: 95 psig - This limit may be exceeded during starts if oil temperature is below 21°C (70°F) (for Airplanes with engine FADEC software previous to version B7.6 installed).  
 110 psig (This limit may be exceeded during starts if oil temperature is below 21°C (70°F) (for Airplanes with engine FADEC software version B7.6 or later approved version installed).  
 For takeoff and go-around the maximum limit is 115 psi, limited to 5 minutes.  
 For aircraft which have complied with SBAE 30071-79-025 or equivalent, the maximum limit for takeoff and go around is 155 PSI, limited to 2 minutes.  
 Minimum: 48 psig (N2 equal or above 88%)  
 34 psig (N2 below 88%)

#### APU Limits (both models)

Maximum RPM: 108%  
 Maximum EGT: Steady State (Time limited to 5 minutes) 1323°F (717° C)  
 Running (Normal) 1256°F (680° C)

#### Airspeed Limits (EAS)

Maximum Operating Limit Speed  $V_{MO}$ :  
 - 0 to 8,000 ft: 250 KEAS  
 - 10,000 to 26,300 ft: 320 KEAS  
 - 26,300 to 37,000 ft: 0.78 Mach  
 - (Linear variation from 8,000 to 10,000 ft.)

Maneuvering speed ( $V_A$ ): 200 KEAS

Maximum flap extended speed ( $V_{FE}$ ):  
 - Flaps 9° (Takeoff/Approach): 250 KEAS  
 - Flaps 18° ( Takeoff) 200 KEAS (See Note 15)  
 - Flaps 22°: 200 KEAS  
 - Flaps 45° (Landing) : 145 KEAS

Maximum landing gear extended speed ( $V_{LE}$ ): 250 KEAS

Maximum landing gear operating speed ( $V_{LO}$ ):  
 -  $V_{LO}$  for retraction 200 KEAS  
 -  $V_{LO}$  for extension 250 KEAS

#### C. G. Limits

(landing gear extended) 594.4 to 619.4 inches (17.4% to 39.5% MAC) with 46,495 lbs. (21,090 kg).  
 594.4 to 619.4 inches (17.4% to 39.5% MAC) with 46,275 lbs. (20,990 kg).  
 592.5 to 619.4 inches (15.7% to 39.5% MAC) with 42,549 lbs. (19,300 kg).  
 590.3 to 623.3 inches (13.6% to 43.0% MAC) with 37,699 lbs. (17,100 kg).  
 588.3 to 623.3 inches (12.0% to 43.0% MAC) with 34,171 lbs. (15,500 kg).  
 588.3 to 623.3 inches (12.0% to 43.0% MAC) with 29,542 lbs. (13,400 kg).

608.6 inches (30% MAC) with 27,337 lbs. (12,400 kg).

Straight linear variation between the points given.

Moment due to landing gear retraction - 10,155 in-lbs. (-117 kgf-m)  
(the aircraft C.G. is moved forward with the retraction).

<u>Maximum Weights</u>	Ramp	46,495 lbs. (21,090 kgf)
	Takeoff	46,275 lbs. (20,990 kgf)
	Landing	42,549 lbs. (19,300 kgf)
	Zero fuel	39,462 lbs. (17,900 kgf)

Maximum Baggage 2,646 lbs. (1,200 kg)

Fuel Capacity 1373.8 gallons (two tanks, 686.9 gallons each at +603.6 inches).  
Unusable fuel of 14.3 gallons (7.15 gallons for each tank).

Serial Numbers Eligible 145178 and subsequent. A Brazilian Certificate of Airworthiness for Export endorsed as noted under "Import Requirements" must be submitted for each individual aircraft which application for U.S. certification is made.

## **12. - Model EMB-145EP, (Transport Category), Approved October 14, 2003**

<u>Engine</u>	Two – Rolls Royce Corporation (See Note 16.) Model AE 3007A, AE3007A1/1, AE3007A1, or Model AE3007A1P (See Note 12 for engine intermix operation.)
<u>Fuel</u>	Brazilian Specification CNP-08/QAV1. ASTM Specification D-1655 JET A or JET A1 MIL-T-83133A JP-8.
<u>APU</u>	Sundstrand Aerospace Model T-62T-40C11 or T-62T-40C14 Limitations as stated in Sundstrand Doc. No. ESR 0921 and No. ESR 1112
<u>Oil</u>	Engine: MIL-L-7808 or MIL-L-23699  APU: MIL-L-23699 or MIL-L-7808

### Engine Models AE3007A and AE3007A1/1 Limits

Operating Conditions	Static Thrust (lb.)	Rotor Speed (%)		Temperature Interturbine (°C)
		N1	N2	ITT
	-1000ft			
Takeoff	7,580	100 <sup>(2)</sup>	102.5 <sup>(3)</sup>	921 <sup>(1)</sup> (1690° F)
Maximum Continuous	6,820	100	102.5	868 (1600° F)
Ground			53.6 (min), 102.5 (max)	
Starting				800 (1472° F)

(1) Time limited to 5 minutes.

(2) 100 % N1 = 8,700 rpm

(3) 102.5 % N2 = 16,270 rpm

### Engine Model AE3007A1 Limits

Operating Conditions	Static Thrust (lb.)	Rotor Speed (%)		Temperature Interturbine (°C)
		N1	N2	ITT
	-1000ft			
Takeoff	7,580	100 <sup>(2)</sup>	102.5 <sup>(3)</sup>	948 <sup>(1)</sup> (1738° F)
Maximum Continuous	6,820	100	102.5	901 (1653° F)
Ground			53.6 (min), 102.5 (max)	
Starting				800 (1472° F)

(1) Time limited to 5 minutes.

(2) 100% N1 = 8,700 rpm

(3) 102.5 % N2 =16,270 rpm

#### Engine Model AE3007A1P Limits

Operating Conditions	Static Thrust (lb.)	Rotor Speed (%)		Temperature Interturbine (°C)
		N1	N2	
	-1000ft	N1	N2	ITT
Takeoff	8,338	100 <sup>(2)</sup>	102.5 <sup>(3)</sup>	948 <sup>(1)</sup> (1738° F)
Maximum Continuous	6,852	100	102.5 <sup>(3)</sup>	901 (1653° F)
Ground			53.6 (min), 102.5 (max)	
Starting				800 (1472° F)

(1) Time limited to 5 minutes.

(2) 100 % N1 =8,700 rpm

(3) 102.5 % N2 = 16,270 rpm

#### Oil Temperature

Maximum: 126°C (260°F)  
 Normal oil temperature range: 21°C to 126°C (70 at 260°F)  
 Minimum temperature for starting: above -40°C (-40°F) for lubrication oil specified by MIL-L-23699  
 above -54°C (-65°F) for lubrication oil specified by MIL-L-7808

Minimum to increase N2 above 83%: 40°C (104°F)

#### Oil Pressure

Maximum: 95 psig (This limit may be exceeded during starts if oil temperature is below 21°C (70°F) (for Airplanes with engine FADEC software previous to version B7.6 installed).  
 110 psig (This limit may be exceeded during starts if oil temperature is below 21°C (70°F) (for Airplanes with engine FADEC software version B7.6 or later approved version installed).  
 For takeoff and go-around the maximum limit is 115 psi, limited to 5 minutes.  
 For aircraft, which have complied with SBAE 30071-79-025 or equivalent, the maximum limit for takeoff and go around is 155 PSI, limited to 2 minutes.  
 Minimum: 48 psig (N2 equal or above 88%)  
 34 psig (N2 below 88%)

#### APU Limits (both models)

Maximum RPM: 108%  
 Maximum EGT: Steady State (Time limited to 5 minutes) 1323°F (717° C)  
 Running (Normal) 1256°F (680° C)

#### Airspeed Limits (EAS)

Maximum Operating Limit Speed  $V_{MO}$ :  
 - 0 to 8,000 ft: 250 KEAS  
 - 10,000 to 26,300 ft: 320 KEAS  
 - 26,300 to 37,000 ft: 0.78 Mach  
 - (Linear variation from 8,000 to 10,000 ft.)

Maneuvering speed ( $V_A$ ): 200 KEAS

Maximum flap extended speed ( $V_{FE}$ ):  
 - Flaps 9° (Takeoff/Approach): 250 KEAS  
 - Flaps 18° ( Takeoff) 200 KEAS (See Note 15)  
 - Flaps 22°: 200 KEAS  
 - Flaps 45° (Landing) : 145 KEAS

Maximum landing gear extended speed ( $V_{LE}$ ): 250 KEAS

Maximum landing gear operating speed ( $V_{LO}$ ):  
 - $V_{LO}$  for retraction 200 KEAS  
 - $V_{LO}$  for extension 250 KEAS

C. G. Limits

(landing gear extended)

594.4 to 619.4 inches (17.4% to 39.5% MAC) with 46,495 lbs. (21,090 kg).  
 594.4 to 619.4 inches (17.4% to 39.5% MAC) with 46,275 lbs. (20,990 kg).  
 594.0 to 619.4 inches (17% to 39.5% MAC) above 45,415 lbs. (20,600 kg).  
 594.0 to 623.3 inches (17% to 43% MAC) with 45,415 lbs. (20,600 kg).  
 588.3 to 623.3 inches (12% to 43% MAC) with 34,172 lbs. (15,500 kg).  
 588.3 to 623.3 inches (12% to 43% MAC) with 28,660 lbs. (13,000 kg).  
 619.9 inches (40% MAC) with 26,455 lbs. (12,000 kg).

Straight linear variation between the points given.

Moment due to landing gear retraction - 10,155 in-lbs. (-117 kgf-m)  
 (the aircraft C.G. is moved forward with the retraction).

Maximum Weights

Ramp	46,495 lbs. (21,090 kgf)
Takeoff	46,275 lbs. (20,990 kgf)
Landing	41,226 lbs. (18,700 kgf)
Zero fuel	37,699 lbs. (17,100 kgf)

Maximum Baggage

2,646 lbs. (1,200 kg)

Fuel Capacity

1373.8 gallons (two tanks, 686.9 gallons each at +603.6 inches).  
 Unusable fuel of 14.3 gallons (7.15 gallons for each tank).

Serial Numbers Eligible

145004 and subsequent. A Brazilian Certificate of Airworthiness for Export endorsed as noted under "Import Requirements" must be submitted for each individual aircraft which application for U.S. certification is made.

Data Pertinent to all EMB-145 ( ) ModelsCertification Basis

Federal Aviation Regulation (FAR) Part 21, including Amendments through 21-69, effective August 16, 1991; Part 25 including Amendments through 25-84, effective July 10, 1995, with the following additions:

Special Condition No. 25-ANM-118: "High Intensity Radiated Fields (HIRF) Protection" (FARs 21.16, 25.1309, 25.1333 and 25.1431)

Special Condition No. 25-ANM-131: "Thrust reverser systems" used as optional equipment. (FAR 21.16; for aircraft without thrust reversers, the effect of wet runway surfaces on accelerate-stop distances must be accounted for in accordance with criteria contained in NPRM 93-8 and its associated guidance; takeoff limitations for operation on wet runway surfaces must be predicated on the wet runway accelerate-stop criteria contained in NPRM 93-8).

FAR 25 amendment 92 (final rule of the NPRM 93-8) was the means of compliance to the Special Condition.

Special Condition No. ANM-113, ANM-115, ANM-116, SEA AEG "Flammability Requirements of Aircraft seats Special condition" (FAR 25.853)

Equivalent Level of Safety Findings:

- Use of 1g stall criteria (various FARs);
- Cockpit underfloor access hatch and rear fuselage electronic compartment access hatch (FAR 25.783(f));
- Flight critical thrust reverser (FAR 25.933(a)(1)(ii)); ELOS Memo TC0714AT-T-P-1.
- Turbine engine tailpipe fire detection (FAR 25.1203(a));
- Digital only display of turbine engine high/intermediate pressure rotor speed (N2) (FAR 25.1305(c)); ELOS Memo TC0714AT-T-P-10.
- APU instrumentation and monitoring requirements (FAR 25.1305 and 25.1501(b)); and
- Cabin Altitude Warning System – High Altitude takeoff and landing Operations – (FAR 25.841(b)(6)) for EMB-145XR and EMB-145LR. ELOS Memo AT01341B-T-S-1.

Optional

<u>Requirements:</u>	Optional compliance to the icing requirements of FAR 25.1419 was demonstrated. Compliance to the ditching requirements of FAR 25.801 has <b>not</b> been demonstrated. The EMB-145 ( ) models are approved with the thrust reversers removed.
<u>Noise standard :</u>	FAR 36 - including amendment 36-1 through 36-21, effective January 21, 1996.
<u>Fuel venting and exhaust emission :</u>	FAR 34 - including amendment 34-1 through 34-2 effective January 21, 1996.
<u>Datum</u>	Is a perpendicular plane to fuselage center line located 535.5 inches forward of the center section spar of the wing (wing stub). This spar is located 114.1 inches forward of the rear jacking points.
<u>Mean Aerodynamic Chord</u>	112.8 inches. The MAC leading edge is 574.8 inches aft of the datum.
<u>Leveling Means</u>	Plumb between the upper part hole and a mark in the lower part of the forward window frame which is located aft of the emergency exit (reference 610.7 inches).
<u>Minimum Crew</u>	Two (pilot and copilot) for all types of flight.
<u>Number of Occupants</u>	Maximum 55, including 1 pilot, 1 copilot, 2 attendants (1 required per 14 CFR §121.391), 1 observer (check pilot) and 50 passengers.
<u>Oil Capacity</u>	3.0 gallons in each nacelle at 879.2 inches

Data Pertinent to EMB-135ER and EMB-135LR Models

<u>Certification Basis</u>	<p>Federal Aviation Regulation (FAR) Part 21, including Amendments through 21-74, effective March 12, 1997;</p> <p>Part 25 including Amendments through 25-84; 25-85; FAR 25.1517 from 25-86; 25-88; 25-90; FAR 25.331, 25.335(b)(2), 25.345, 25.351, 25.363, 25.371, 25.415, 25.491, 25.499 and 25.561 from 25-91; 25-93; FAR 25.807 from 25-94; and 25-97.</p> <p>Special Condition No. 25-ANM-118: "High Intensity Radiated Fields (HIRF) Protection" (FARs 21.16, 25.1309, 25.1333 and 25.1431)</p> <p>Special Condition No. 25-ANM-131: "Thrust reverser systems" used as optional equipment. (FAR 21.16; for aircraft without thrust reversers, the effect of wet runway surfaces on accelerate-stop distances must be accounted for in accordance with criteria contained in NPRM 93-8 and its associated guidance; takeoff limitations for operation on wet runway surfaces must be predicated on the wet runway accelerate-stop criteria contained in NPRM 93-8)</p> <p>Special Condition No. ANM-113, ANM-115, ANM-116, SEA AEG "Flammability Requirements of Aircraft seats Special condition" (FAR 25.853)</p> <p>Exemption No. 6910 (Docket No. 29596): Allows use of 1-g stall speed instead of the minimum speed in the stall as the basis for compliance to FAR 36.201(a), Appendix C, section C36.9(e)(1).</p> <p>Exemption No. 6919 (Docket No. 29593): Partial grant of exemption to FAR 25.783(f), which expires on December 31, 2001. This exemption is applicable only to airplane serial numbers 145145, 145156, 145162, 145164, 145166, 145173 and 145174 which are not modified by SB 145-52-0030.</p>
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Equivalent Level of Safety Findings:

- Use of 1g stall criteria (various FARs);
- Flight critical thrust reverser (FAR 25.933(a)(1)(ii)); ELOS Memo TC0714AT-T-P-1

- Turbine engine tailpipe fire detection (FAR 25.1203(a));
- Digital only display of turbine engine high/intermediate pressure rotor speed (N2) (FAR 25.1305(c)); ELOS Memo TC0714AT-T-P-10 and
- APU instrumentation and monitoring requirements (FAR 25.1305 and 25.1501(b)).

OptionalRequirements:

Optional compliance to the icing requirements of FAR 25.1419 was demonstrated. Compliance to the ditching requirements of FAR 25.801 has **not** been demonstrated. The EMB-135ER and EMB-135LR models are approved with thrust reversers removed.

Part 26 – Continued Airworthiness and Safety Improvements for Transport Category Airplanes:

Based on § 21.29(a) for new import 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.

Noise standard :

FAR 36 - including amendment 36-1 through 36-21, effective January 21, 1996.

Fuel venting and exhaust emission :

FAR 34 - including amendment 34-1 through 34-3 effective February 3, 1999.

Datum

Is a perpendicular plane to fuselage center line located 456.5 inches forward of the center section spar of the wing (wing stub). This spar is located 114.1 inches forward of the rear jacking points.

Mean Aerodynamic Chord

112.8 inches. The MAC leading edge is 495.8 inches aft of the datum.

Leveling Means

Plumb between the upper part hole and a mark in the lower part of the forward window frame which is located aft of the emergency exit (reference 531.5 inches).

Minimum Crew

Two (pilot and copilot) for all types of flight.

Number of OccupantsEMB-135ER/LR

Maximum 42, including 1 pilot, 1 copilot, 2 attendants (1 required per 14 CFR §121.391), 1 observer (check pilot) and 37 passengers.

Oil Capacity

3.0 gallons in each nacelle at +739.6 inches

Data Pertinent to **EMB-135KE and EMB-135KL** ModelsCertification Basis

Models EMB-135KE and EMB-135KL comply with all FAR 25 requirements noted above for EMB-135ER/LR models. In addition, the EMB-135KE and EMB-135KL comply with Amendment 25-98, and the following other regulations:

Exemption No. 7554 (Docket No. FAA-2001-0-9103-1): Allows use of 1-g stall speed instead of the minimum speed in the stall as the basis for compliance to FAR 36.201(a), Appendix C, section C36.9(e)(1).

OptionalRequirements:

Optional compliance to the icing requirements of FAR 25.1419 was demonstrated. Compliance to the ditching requirements of FAR 25.801 has **not** been demonstrated. The EMB-135KE and EMB-135KL models are approved to operate with the thrust reversers removed.

Part 26 – Continued Airworthiness and Safety Improvements for Transport Category Airplanes:

Based on § 21.29(a) for new import 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.

Noise standard :

FAR 36 - including amendment 36-1 through 36-22 effective December 13, 1999.

Fuel venting and exhaust emission:

FAR 34 - including amendment 34-1 through 34-3 effective February 3, 1999.

<u>Datum</u>	Is a perpendicular plane to fuselage center line located 499.4 inches forward of the center section spar of the wing (wing stub). This spar is located 114.1 inches forward of the rear jacking points.
<u>Mean Aerodynamic Chord</u>	112.8 inches. The MAC leading edge is 538.7 inches aft of the datum.
<u>Leveling Means</u>	Plumb between the upper part hole and a mark in the lower part of the forward window frame which is located aft of the emergency exit (reference 574.4 inches).
<u>Minimum Crew</u>	Two (pilot and copilot) for all types of flight.
<u>Number of Occupants</u>	<u>EMB-135KE/KL</u> Maximum 49, including 1 pilot, 1 copilot, 2 attendants (1 required per 14 CFR §121.391), 1 observer (check pilot) and 44 passengers.
<u>Oil Capacity</u>	4.1 gallons in each nacelle at +739.6 inches

Data Pertinent to EMB-135BJ Model

**Data pertinent to Legacy 600:**

<u>Certification Basis</u>	<p>Model EMB-135BJ complies with all FAR 25 requirements noted above for EMB-135ER/LR models. In addition, the EMB-135BJ complies with FAR 25.571(e)(1) of Amendment 25-96, Amendment 25-98 and the following other regulations:</p> <p>Special Condition No. 25-207-SC (Docket No.NM255): “Interaction of Systems and Structures” (FAR 25.1309)</p> <p>Exemption No. 7554 (Docket No. FAA-2001-0-9103-1): Allows use of 1-g stall speed instead of the minimum speed in the stall as the basis for compliance to FAR 36.201(a), Appendix C, section C36.9(e)(1).</p> <p>Exemption No. 7811 (Docket No. FAA-2001-9337): Side-facing divans (FAR 25.785(b)). (See Note 19.)</p> <p>Exemption No. 7878 (Docket No. FAA-2001-9337): Side-facing divans (FAR 25.785(b)). This exemption is applicable only to those Embraer EMB-135BJ model airplanes manufactured prior to January 1, 2004. (See Note 19.)</p> <p>Exemption No. 7878A (Docket No. FAA-2001-9337): Side-facing divans (FAR 25.785(b)). This exemption granted an amendment to exemption No 7878 to remove the limitation that restricts its applicability to airplanes manufactured before to January 1, 2004.</p> <p>Exemption from 14 CFR §§ 26.11, 26.33 26.35 26.43 26.45 26.49. Exemption No 10050</p> <p>Exemption No. 7909 (Docket No. FAA-2002-13283): Pressure Fueling System (FAR 25.979(b)(2)). (See Note 20.)</p> <p>Exemption No. 7933 (Docket No. FAA-2002-13021): Uncontrollable High Engine Thrust or Power (FAR 25.901(c)). (See Note 21)</p>
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Equivalent Level of Safety (ELOS)

Equivalent safety findings issued in accordance with 14 CFR part 21, §21.21(b)(1):

1. Minor Crash Landing (FARs 25.721(b) and 25.963(d) ELOS Memo No. T5124AT-T-A-2.
2. Checked Maneuver Loads FAR 25.331(c)(2), ELOS Memo No. AT5124AT-T-A-5.
3. Baggage Compartment Access Door FARs 25.787, 25.855, 25.857 (c) and 25.1447, ELOS Memo No. AT5124AT-T-A-6.
4. Airplane Operation with Air Conditioning Packs Off During Takeoff FAR 25.831(a), ELOS Memo No. AT5124AT-T-S-3.
5. Flight Critical Thrust Reverser EMB-135, EMB-145, EMB-135BJ model airplanes, FARs 25.933(a)(1)(i), (a)(1)(ii), (a)(2), 25.1309(b)(1) ELOS Memo No. TC0714AT-T-P-1.
6. Digital Only Display of Turbine Engine High/Intermediate Pressure Rotor Speed (N2) previously approved for EMB-135 model airplane. (§§ 25.901, 25.1305, 25.1309, 25.1321, & 25.1549) ELOS Memo No. TC0714AT-T-P-10.

OptionalRequirements:

Optional compliance to the icing requirements of FAR 25.1419 at Amendment 25-72 was demonstrated.

Compliance to the ditching requirements of FAR 25.801 has **not** been demonstrated.

Part 26 – Continued Airworthiness and Safety Improvements for Transport Category Airplanes:

Based on § 21.29(a) for new import 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.

The EMB-135BJ model is not approved with the thrust reversers removed.

Noise standard :

FAR 36 - including amendment 36-1 through 36-24 effective August 7, 2002.

Fuel venting and exhaust emission :

FAR 34 - including amendment 34-1 through 34-3 effective February 3, 1999.

Datum

Is a perpendicular plane to fuselage center line located 456.5 inches forward of the center section spar of the wing (wing stub). This spar is located 114.1 inches forward of the rear jacking points.

Mean Aerodynamic Chord

112.8 inches. The MAC leading edge is 495.8 inches aft of the datum.

Leveling Means

Plumb between the upper part hole and a mark in the lower part of the forward window frame which is located aft of the emergency exit (reference 531.5 inches).

Minimum Crew

Two (pilot and copilot) for all types of flight.

Number of Occupants

EMB-135BJ

Maximum 23, including 1 pilot, 1 copilot, 1 attendant (optional), 1 observer (check pilot) and 19 passengers.

Oil Capacity

**3,0** gallons in each nacelle at +739.6 inches

**Data pertinent to Legacy 650:****Certification Basis:**

Based on September 19, 2008, date of application to the FAA, under the provisions of 14 CFR 21.101, the applicable type certification standards are as follows:

- The original certification basis for the Legacy 600 is applicable for the Airworthiness and Environmental standards for components, areas, appliance and systems not affected by the type design change presented in the DCA 0145-000-00020-2008/FAA Rev F.
- New compliance determination is required for the following US Title 14 CFR part 25 airworthiness standards effective February 1, 1965, including amendments 25-1 through 25-124 for components, areas, appliance and systems affected by the type design change presented in the DCA 0145-000-00020-2008/FAA Rev F:

25.1	25.2	25.5	25.21	25.23
25.25	25.27	25.29	25.31	25.101
25.103	25.105	25.107	25.109	25.111 (a)(b)(c)(d)
25.113	25.115	25.117	25.119	25.121
25.123 (a)(b)	25.125(a)(b) (c)(f)(g)	25.143	25.145	25.147 (a)(c)(d)(f)
25.149 (a)(b)(c)(d)	25.161 (a)(b)(c)(d)	25.171	25.173	25.175
25.177	25.181	25.201	25.203	25.207
25.231(a)	25.233	25.235	25.237(a)	25.251
25.253	25.255	25.301	25.303	25.305
25.307	25.321	25.331	25.333	25.335 (a)(b)(c)
25.337 (a)(b)(c)	25.341	25.343 (a)(b)(3)	25.345 (a)(b)(2)(d)	25.349
25.351	25.361 (b)	25.363	25.365	25.367
25.371	25.373 (a)	25.391	25.393	25.395
25.397	25.399 (a)(1)(b)	25.409 (c)	25.415	25.427 (a)(b)(c)
25.445 (a)	25.457	25.459	25.471	25.477
25.479 (a)(c)(d)	25.481 (a)(c)	25.483	25.485	25.487
25.489	25.491	25.493 (b)(d)(e)	25.495	25.499 (a)(b)(c)(e)
25.503	25.507 (a)(b)	25.509 (a)(1)(2)(3)(ii)	25.511	25.519
25.561		25.581	25.601	25.603
25.605	25.607	25.609	25.611	25.613
25.619	25.621	25.623	25.625	25.629

25.631	25.651	25.657	25.671 (a)(b)(c)	25.672 (b)(c)
25.675	25.677	25.683	25.685	25.689
25.693	25.697	25.699	25.701	25.703
25.721	25.729 (a)(1)(b)(c)	25.731 (a)(b)(c)(d)	25.733 (b)(c)	25.735 (a)(d)(e)(1)
25.775	25.777 (a)(b)(d)	25.785 (b)(c)(f)(1)(3)	25.787 (a)(b)	25.789 (a)
25.807 (i)(2)	25.831 (a)	25.855 (j)	25.863	25.865
25.869 (a)(3)	25.899	25.901 (a)(b)(2)(3) (c)	25.903 (a)(b)(c)(d) (e)	25.904
25.933 (a)	25.934	25.939	25.943	25.951 (a)(b)(2)(c) (d)
25.952	25.953	25.954	25.955	25.957
25.959	25.961	25.963	25.965 (a)(b)	25.967
25.969	25.971	25.973	25.975 (a)	25.977 (a)(2)(c)(d) (e)
25.979	25.981	25.991	25.993	25.994
25.995	25.997	25.999	25.1001 (a)	25.1011 (a)
25.1013 (b)(c)(d)(e)	25.1015	25.1017	25.1019	25.1021
25.1023	25.1041	25.1043 (a)(1)(2)(b)	25.1045 (a)(b)(c)	25.1091 (a)(1) (d)(1)(2)
25.1093 (b)	25.1103 (c) (d)	25.1141 (f)(2)	25.1143 (c)	25.1181 (b)
25.1182	25.1183	25.1185	25.1187	25.1189 (a)(1)(b)(c)
25.1191	25.1193 (a)(b)(d)	25.1195	25.1199 (d)	25.1203
25.1207	25.1301	25.1303	25.1305 (a)(1)(2) (d)(1)	25.1309
25.1310	25.1316	25.1317	25.1321 (a)(c)(1)	25.1322
		25.1329 (g)	25.1337 (b)(1)	25.1351 (a)(1)(d)
25.1353 (a)(c)	25.1357 (a)(c)(d)(e)	25.1360 (a)(b)	25.1419	25.1431
25.1438 (b)(c)	25.1455	25.1461 (b)(c)	25.1501 (a)(b)	25.1503
25.1505	25.1507	25.1511	25.1513	25.1515
25.1516	25.1517	25.1519	25.1521 (a)(c)(d)	25.1523 (as per App. D)
25.1527	25.1529 (as per App. H)	25.1531	25.1533	25.1541

25.1549	25.1551	25.1553	25.1555 (c)	25.1581
25.1583 (a)(1)(2)(3)	25.1585	25.1587	25.1701	25.1703
25.1705 (a)(b)(2)(4)	25.1707 (a)(b)(e)(f)	25.1709	25.1711 (e)	25.1713
25.1715	25.1717	25.1719	25.1721 (b)	25.1723
25.1725	25.1727	25.1729*		

\* Embraer was required to demonstrate compliance with 25.1729 for the changed part of the type design, however elected to demonstrate compliance with 25.1729 for the entire airplane.

Under the provisions of Title 14 CFR part 21.101(b)(3) exceptions were approved for following part 25 airworthiness standards, for which compliance was demonstrated in accordance with original certification basis applicable to Legacy 600 :

- a. 25.473
- b. 25.571
- c. 25.723
- d. 25.725
- e. 25.727
- f. 25.1435

Special conditions:

Special Conditions applicable to Legacy 600 will remain applicable for Legacy 650 unless otherwise incorporated by adopting later 14 CFR amendments. In addition, as a result of type design changes presented in DCA 0145-000-00020-2008/FAA Rev F., following Special Conditions have been proposed in accordance with 14 CFR § 21.16.

1. SC Limit Engine Torque Loads for Sudden Engine Stoppage

Equivalent Level of Safety (ELOS)

Equivalent safety findings issued in accordance with 14 CFR part 21, §21.21(b)(1):

1. Minor Crash Landing – (§§ 25.721 (b), 25.963(d) ) ELOS Memo No AT0647IB-T-A-2
2. Lack of Pressurization Prevention Means for Maintenance Access Hatches previously approved for EMB-145 model airplane. (§25.783(f)) ELOS Memo No
3. Flight Critical Thrust Reverser p EMB-135, EMB-145, and EMB-135BJ model airplanes. (§§ 25.933(a)(1)(i), (a)(1)(ii), (a)(2), 25.1309(b)(1) ELOS Memo No. TC0714AT-T-P-1
4. Digital Only Display of Turbine Engine High/Intermediate Pressure Rotor Speed (N2) previously approved for EMB-135 model airplane. (§§ 25.901, 25.1305, 25.1309, 25.1321, & 25.1549) ELOS Memo No. TC0714AT-T-P-10.

Exemptions

Exemptions applicable to Legacy 600 will remain applicable for Legacy 650 unless otherwise amended. In addition, as a result of type design changes presented in the DCA 0145-000-00020-2008/FAA Rev D, following new exemptions have been proposed in accordance with 14 CFR 11.25:

1. Exemption from 14 CFR §§ 26.11, 26.33 26.35 26.43 26.45 26.49. Exemption No 10050
2. Exemption from § 25.981(a)(3) amendment 25-102 for fuel-tank structural lightning protection Exemption No 10138
3. Amended Exemption from § 25.901(c) - Uncontrollable high thrust failure conditions Exemption No 7933A
4. Exemption from § 25.981(a)(3) amendment 25-102 for Fuel System Wiring Installation. Exemption No 10180
5. Exemption from § 25.981(a)(3) amendment 25-102 for Fuel System Wiring Installation. Exemption No 10180A –granted time limitations extension in the current exemption by one year.
6. Exemption from §§ 25.901(c), 25.954 – Auxiliary Fuel Tank Vents. Exemption No 10213

Optional Design Regulations:

*Ice Protection § 25.1419*

Noise Standards:

14 CFR part 36, as amended by Amendments 36-1 through 36-28, effective February 03, 2006

Fuel Venting and Exhaust Emissions Standards:

14 CFR part 34, as amended by Amendments 34-1 through 34-03, effective 03 February 1999.

14 CFR Part 26:

The exemption for 14 CFR Part 26.11 granted for the EMB-135BJ (Legacy 600) is implied to be applicable to this type design change. EMBRAER was required to demonstrate compliance with § 25.1729 for the changed part of the type design, however elected to demonstrate compliance with § 25.1729 for the entire airplane.

The exemption granted for 14 CFR Parts 26.33, 26.35, 26.43, 26.45 and 26.49 applicable to EMB-135BJ (Legacy 600) is implied to be applicable to this type design change

Additional Design Requirements and Conditions:

As a result of type design changes presented in the DCA 0145-000-00020-2008/FAA Rev F, the following subjects has been reviewed and evaluated in accordance with § 21.21(b)(2) :

1. Auxiliary Fuel Tank Penetration
2. Auxiliary Fuel Tank Protection During Survivable Crash

Datum

Perpendicular plane to fuselage centerline located 11595 mm forward of the center section spar of the wing (wing stub). This spar is located 2899 mm forward the aft jacking points.

Mean Aerodynamic Chord

2865 mm; the MAC leading edge is 12594 mm

<u>Leveling Means</u>	Plumb between the upper part hole and a mark in the lower part of the forward window frame which is located after the emergency exit, 13500 mm of the datum
<u>Minimum Crew</u>	2 (pilot and copilot)
Number of Occupants	19 pax maximum
<u>Oil Capacity</u>	6 liters in each reservoir

Data Pertinent to EMB-145XR Models

<u>Certification Basis</u>	<p>Model EMB-145XR complies with all FAR 25 requirements noted above for EMB-135ER/LR models. In addition, the EMB-145XR complies with FAR 25.571(e)(1) of Amendment 25-96, Amendment 25-98 and the following other regulations:</p> <p>Special Condition No 25-207-SC (Docket No. NM225) § 25.1309 Interaction of Systems and Structures.</p> <p>Exemption No. 7909 (Docket No. FAA-2002-13283): Pressure Fueling System (FAR 25.979(b)(2)). (See Note 20)</p> <p>Exemption No. 7908 (Docket No. FAA-2002-12717) Uncontrollable High Engine Thrust or Power (FAR 25.901(c)). (See Note 21)</p> <p>Equivalent Level of Safety Findings:</p> <ul style="list-style-type: none"> <li>-Minor Crash Landing (FARs 25.721(b) and 25.963(d) ELOS Memo No. AT0057IB-T-A-8 );</li> <li>-Checked Maneuver Loads (FAR 25.331(c)(2), ELOS Memo No. AT5124AT-T-A-5 );</li> <li>- Airplane Operation with Air Conditioning Packs Off During Takeoff (FAR 25.831(a), ELOS Memo No. AT5124AT-T-S-3 )</li> </ul>
<u>Optional Requirements:</u>	<p>Optional compliance to the icing requirements of FAR 25.1419 at Amendment 25-72 was demonstrated.</p> <p>Compliance to the ditching requirements of FAR 25.801 has <b>not</b> been demonstrated. The EMB-145XR model is approved with the thrust reversers removed.</p>

Part 26 – Continued Airworthiness and Safety Improvements for Transport Category Airplanes:

	Based on § 21.29(a) for new import 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.
<u>Noise standard :</u>	FAR 36 - including amendment 36-1 through 36-24 effective August 07, 2002.
<u>Fuel venting and exhaust emission :</u>	FAR 34 - including amendment 34-1 through 34-3 effective February 3, 1999.
<u>Datum</u>	Is a perpendicular plane to fuselage center line located 535.5 inches forward of the center section spar of the wing (wing stub). This spar is located 114.1 inches forward of the rear jacking points.
<u>Mean Aerodynamic Chord</u>	112.8 inches. The MAC leading edge is 574.8 inches aft of the datum.
<u>Leveling Means</u>	Plumb between the upper part hole and a mark in the lower part of the forward window frame which is located aft of the emergency exit (reference 610.2 inches).
<u>Minimum Crew</u>	Two (pilot and copilot) for all types of flight.

<u>Number of Occupants</u>	Maximum 55, including 1 pilot, 1 copilot, 2 attendants (1 required per 14 CFR §121.391), 1 observer (check pilot) and 50 passengers.
<u>Oil Capacity</u>	3,0 gallons in each nacelle at +879.2 inches

### Data Pertinent to All Models (EMB-145() and EMB-135())

<u>Import Requirements</u>	<p>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): “This aircraft conforms to its U.S. type design (Type Certificate Number T00011AT) and is in a condition for safe operation.”</p> <p>The U.S. airworthiness certification basis for aircraft type certificated under 14 CFR Part 21, section 21.29, exported by country of manufacture is section 21.183(c) or 21.185(c).</p> <p>The U.S. airworthiness certification basis for aircraft type certificated under section 21.29 exported from countries other than the country of manufacture (e.g., third party country) is section 21.183(d) or 21.185(b).</p>																														
<u>Service Information</u>	Service bulletins, structural repair manuals, vendor manuals, aircraft flight manuals, and overhaul and maintenance manuals, which contain a statement that the document is CTA approved, are accepted by the FAA and are considered FAA approved. These approvals pertain to the type design only. Changes to type design that are approved by CTA designated engineering representatives via either CTA Form FDH-200-10 or FDH-200-06( ) are also considered FAA approved.																														
<u>Equipment</u>	<p>The basic required equipment as prescribed in the applicable airworthiness regulations (see Certification Basis) must be installed in the aircraft.</p> <p>The approved equipment is listed in the Embraer Technical Report 145-MS-370. For the EMB-135BJ, the equipment is listed in Embraer Report 135-MS-705.</p>																														
<u>Maximum Operating Altitude</u>	<p>All Models EMB-145() and EMB-135(), except EMB-135BJ: 37,000 ft (11,278 m).</p> <p>Model EMB-135BJ S/N 145863 and on (or modified according to SB 145LEG-00-0007): 41,000 ft (12,497 m).</p> <p>Model EMB-135BJ previous to S/N 145863: 39,000 ft (11,887 m).</p>																														
<u>Takeoff and Landing</u>	<p>All Models EMB-145() and EMB-135(), except EMB-135BJ: 8,000 ft (2,438 m).</p> <p>EMB-135BJ: 13,800 ft. (4,206m)</p> <p>EMB-145XR modified according to SB 145-31-0042 or equivalent factory modification: 10,000 ft (3,048 m).</p> <p>EMB-145LR modified according to SB 145-21-0042 and SB 145-32-0093 or equivalent factory modification: 10,000 ft (3,048 m).</p>																														
<u>Control Surfaces Movement's</u>	<table> <tr> <td>Rudder I:<sup>(1)</sup></td> <td>15.0° ± 1.0° left</td> </tr> <tr> <td></td> <td>15.0° ± 1.0° right</td> </tr> <tr> <td>Rudder II:<sup>(1)(3)</sup></td> <td>11.0° ± 1.0° right</td> </tr> <tr> <td></td> <td>11.0° ± 1.0° left</td> </tr> <tr> <td>Elevator:<sup>(1)</sup></td> <td>27.0° ± 1.0° up</td> </tr> <tr> <td></td> <td>16.5° ± 1.0° down for pre-mod EO 145-056355 or SB 145-27-0043</td> </tr> <tr> <td></td> <td>14.0° ± 1.0° down for pos-mod EO 145-056355 or SB 145-27-0043</td> </tr> <tr> <td>Ailerons:<sup>(1)</sup></td> <td>25.0° ± 1.0° up</td> </tr> <tr> <td></td> <td>15.0° ± 1.0° down</td> </tr> <tr> <td>Flap (outboard):<sup>(2)</sup></td> <td>7.5° ± 1.0°</td> </tr> <tr> <td></td> <td>45.0° ± 1.5° maximum deflection</td> </tr> <tr> <td>Flap (inboard):<sup>(2)</sup></td> <td>9.18° ± 0.8°</td> </tr> <tr> <td></td> <td>45.1° ± 1.5° maximum deflection</td> </tr> <tr> <td>Stabilizer:<sup>(1)</sup></td> <td>0° ± 0.5° neutral</td> </tr> <tr> <td></td> <td>4.0° + 0.5°/-0.0° up</td> </tr> </table>	Rudder I: <sup>(1)</sup>	15.0° ± 1.0° left		15.0° ± 1.0° right	Rudder II: <sup>(1)(3)</sup>	11.0° ± 1.0° right		11.0° ± 1.0° left	Elevator: <sup>(1)</sup>	27.0° ± 1.0° up		16.5° ± 1.0° down for pre-mod EO 145-056355 or SB 145-27-0043		14.0° ± 1.0° down for pos-mod EO 145-056355 or SB 145-27-0043	Ailerons: <sup>(1)</sup>	25.0° ± 1.0° up		15.0° ± 1.0° down	Flap (outboard): <sup>(2)</sup>	7.5° ± 1.0°		45.0° ± 1.5° maximum deflection	Flap (inboard): <sup>(2)</sup>	9.18° ± 0.8°		45.1° ± 1.5° maximum deflection	Stabilizer: <sup>(1)</sup>	0° ± 0.5° neutral		4.0° + 0.5°/-0.0° up
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Spring tab: <sup>(1)(3)</sup>	10.0°+0.5°/-0.0° down 9.0° to 10.5° trailing edge up 12.0° to 13.5° trailing edge down for pre-mod EO 145-099134 or SB 145-27-0110 5.5° to 6.5° trailing edge down for pos-mod EO 145-099134 or SB 145-27-0110
Servo tab: <sup>(1)(3)</sup>	8.5° ± 0.5° up for pre-mod EO 145-056355 or SB 145-27-0043 7.2° ± 0.5° up for pos-mod EO 145-056355 or SB 145-27-0043 13.0° ± 0.5° down

Spoiler (inboard):<sup>(1)</sup> 52.0° ± 2.0°

Spoiler (outboard):<sup>(1)</sup> 30.0° ± 2.0°

(1) Deflections measured normal plane to hinge lines;

(2) Deflections measured parallel to the fuselage center line and normal to wing reference plane,

(3) Deflections measured are relative to the main control surface.

NOTE 1.

Current weight and balance report (WB-135/1562 for the EMB-135BJ and WB-145/1161 for all other EMB-145() and EMB-135() models) including list of equipment included in certificated empty weight and loading instructions, and CTA approved U.S. Airplane Flight Manual must be provided for each aircraft at the time of original certification. The AFM may consist of either 1 or 2 volumes. The certificated basic empty weight and corresponding center of gravity location must include the total engine oil, hydraulic fluid and unusable fuel.

For all the EMB-145 ( ) models and for EMB-135ER/LR models, the PN for the U.S. Airplane Flight Manual is AFM- 145/1153. For the EMB-135KE/KL models, the PN is AFM-140/1330. For the EMB-135BJ model, the PN is AFM-135/1540.

NOTE 2.

All placards required in either the FAA-Approved Airplane Flight Manual, the applicable operating rules or the certification basis must be installed in the airplane.

NOTE 3.

Except for the EMB-135BJ, all the life limitations are provided in the item A 2.2 of “Appendix 2”, “Airworthiness Limitation Requirements” of the document MRB-145/1150. Life Limitations for the EMB-135BJ are provided in section A2.2 of “Appendix 2” of the “Manufacturers Recommended Inspection Program,” document MPG-1483.

NOTE 4.

For all models except the EMB-135BJ, the Certification Maintenance Requirements are listed in section A1.2 of “Appendix 1”, of the document MRB no. 145/1150. For all models except the EMB-135BJ, the Systems and Structural Airworthiness Limitation are listed in A2.2 of “Appendix 2” of document MRB no. 145/1150. The EMB-135BJ Certification Maintenance Requirements are listed in section A1.2 of “Appendix 1” of the “Manufacturers Recommended Inspection Program,” document MPG-1483. The EMB-135-BJ Systems and Structural Airworthiness Limitations are listed in section A2.2 of Appendix 2 of the “Manufacturers Recommended Inspection Program” document MPG-1483.

Embraer Report No. 145-MS-015 for EMB-145 and EMB-135 series, and Report 135-MS-715 for the EMB-135BJ, approved by CTA, contain the Certification Maintenance Requirements (CMR’s), retirement times for safe-life parts and the required thresholds for certain structural items. CMR’s for the engine are listed in the engine Type Certificate Data Sheet. The more restrictive requirement from these two documents shall be in force.

NOTE 5.

Deleted. (Previous information is included in Note 4.)

NOTE 6.

Deleted. (Previous information is included under “Optional Requirements” for each aircraft model.)

NOTE 7.

Deleted.

NOTE 8.

The systems containing User Modifiable Software are:

- IC-600 User modifiable Check List and
- FMS User Modifiable Jeppesen Data Plan Flight Plans.

Modifications by the airplane operator must be submitted for FAA Approval.

NOTE 9.

Standby altimeter must be marked in inches/Hg.

- NOTE 10. Preflight Checks - The ice protection system tests referenced in the Normal Procedures section of AFM-145/1153, AFM-140/1330 and AFM-135/1540 must be performed on the ground, daily, when flight into known or forecast icing is anticipated. This test interval may not be extended without approval of the aircraft certification office.
- NOTE 11. Engine and FADEC combinations installed on the EMB-145 and EMB-135 series airplanes are found in the FAA or ANAC approved technical documentation, which may include but is not limited to Embraer service bulletins. The FAA, or ANAC may approve different combinations. No intermixing of FADECs is permitted.
- NOTE 12. Intermix of engine models AE 3007A and AE 3007A1/1 is permissible in the Model EMB-145ER and EMB-145EP per Embraer Service Bulletin 145-71-0006, issued December 18, 1998, or later CTA approved revision. Intermix operation requires installation of part number 23068689(\*) (software version VI.6A) in all four FADEC positions or of part number 23071903(\*) (software version VI.7) in all four FADEC positions.
- NOTE 13. (a) The airplanes EMB-145ER serial numbers 145044 and 145046 may be converted to the model EMB-145MR if Embraer Service Bulletin No. 145-00-0002 is incorporated.
- (b) The airplanes EMB-145MR serial numbers 145044 and 145046 may be converted to the model EMB-145LR if Embraer Service Bulletin No. 145-28-007 is incorporated.
- NOTE 14. The Models EMB-145xx and EMB-135xx are often referred to in Embraer marketing literature as the “ERJ-145xx”, “RJ145xx”, “ERJ-135xx” or “RJ135xx”, with the appropriate model (LR, MR, ER, etc.) substituted for the “xx”. The Model EMB-135KE is often referred to in Embraer marketing literature as the “EMB-140ER”, “ERJ-140ER,” or “RJ-140ER”. The Model EMB-135KL is often referred to in Embraer marketing literature as the “EMB-140LR”, “ERJ-140LR,” or “RJ-140LR”. The model EMB-135BJ is often referred to in Embraer marketing literature as “Legacy”. These names are strictly marketing designations, and are not part of the official model designations.
- NOTE 15. The Airplanes EMB-145MR, EMB-145ER, EMB-145EP, EMB-145MP and EMB-145LR models may be factory incorporated with Flaps 18° (Takeoff) approval with AE3007A1P Engines installed. They may also be converted to Flaps 18° (Takeoff) approval when AE3007A1P engines are installed by accomplishing Embraer Service Bulletins 145-27-0042, 145-71-0010 and 145-73-0007.
- The Airplanes EMB-135ER and EMB-135LR models may be factory incorporated with Flaps 18°(Takeoff) approval, or may be converted to Flaps 18° (Takeoff) approval by accomplishing Embraer Service Bulletin 145-27-0042.
- NOTE 16. The Engine Data Plates identifying the Engines models installed on the Aircraft models, which are the subject of this Type Certificate Data Sheet, may have either the name “Allison Engine Company” or “Rolls Royce Corporation” on them. This is a name change only, and does not affect the configuration or certification status of the engines identified in Type Certificate Data Sheet TE6CH.
- NOTE 17. Airworthiness Directives (ADs) with effective dates prior to July 26, 2001, with applicability to Embraer Model “EMB-135 series” were incorporated into the production of the models EMB-135KE and EMB-135KL. Airworthiness Directives (ADs) with effective dates prior to August 23, 2002, with applicability to Embraer Model “EMB-135 series” were incorporated into the production of the model EMB-135BJ. Airworthiness Directives (ADs) with effective dates prior to October 22, 2002, with applicability to Embraer Model “EMB-145 series” were incorporated into the production of the model EMB-145XR. The document “Statement of Airworthiness Directives Status”, issued by Embraer Quality Assurance for each new aircraft, provides a complete listing of all AD modifications that were incorporated at the Embraer factory prior to first delivery.
- NOTE 18. The seat installation limitations are defined and approved in the Embraer technical report 135-SA-770 for each EMB-135BJ airplane. The interior configuration is defined and approved in the Embraer technical report 135-IR-708 for each EMB-135BJ airplane. For the S/N 145686 and on, the reports 135-SA-1270 and 135-IR-1208 define the seat installation limitations and the interior configuration respectively.
- NOTE 19. Exemption No. 7811 for side-facing divans is applicable to private use airplanes and does not have a time limitation. Exemption No. 7878 for side-facing divans is applicable to airplanes, which may be operated

for hire or offered for common carriage and does have a time limitation. An EMB-135BJ airplane to which these exemptions are applicable may use either Exemption No. 7811 or Exemption No. 7878, but not both.

- NOTE 20. Exemption No. 7909 for pressure refueling, applicable to Embraer Models EMB-135BJ and EMB-145XR expires on June 30, 2004. No person may operate these airplanes after June 30, 2004, unless the pressure refueling panel has been modified in accordance with the terms of Exemption No. 7909.
- NOTE 21. As stated in Exemptions No. 7908 (EMB-145XR) and 7933 (for EMB-135BJ): The FAA has concluded that the occurrence of any uncontrollable high thrust failure condition, or any of the associated causal failures listed in Embraer letters GEC-3791/2002 and GEC-4202/2002 “may endanger the safe operation of an airplane” and hence are reportable under §121.703(c), 125.409(c), and 135.415(c).
- NOTE 22 EMB-135LR with S/N 145599, and any subsequent, may be configured with 18 passenger seats, other equipment and placards in accordance with Embraer reports 135-IR-008 and 135-MS-322. EMB-135LR having serial number prior may be converted to the 18 passengers seat configuration with accomplishment of an Embraer Service Bulletin approved by the CTA.
- NOTE 23 EMB-135BJ’s with S/N 145625 and on are configured with two Rolls Royce Corporation Engine models AE3007A1E.
- NOTE 24 All AE 3007A1P engines on EMB-135BJ model aircraft which are operated following the Engine Conditioning Monitoring program as described in Chapter 5 of the AE3007A Series Engine Maintenance Manual must use the “N2 Trend Minimum Margin” listed for engine serial numbers 312181 and higher, even if engines with serial numbers 312180 or lower are installed on the aircraft.
- NOTE 25 The EMB-145 family has been demonstrated for Reduced Vertical Separation Minimum (RVSM) capability in compliance with FAA Memorandum 91-RVSM. Maintenance requirements necessary for the EMB-145 to continue to meet RVSM standards are provided in the EMB-145 Maintenance Review Board, MRB-145/1150, Appendix 11 and EMB-135BJ Maintenance Planning Guide, MPG-1483, Appendix 11. Operators must obtain approval from their Flight Standards District Office or Certificate Management Office, as appropriate, to conduct flight in RVSM, Minimum Navigation Performance Specifications (MNPS), and Required Navigational Performance 10 (RNP-10) airspace.
- NOTE 26 From the airplanes Serial Number 145801 and on, the identification serial number changed with the inclusion of two more digits (for example, the Serial Number 145802 turned into 14500802). By the time of the implementation of this modification, an aircraft with serial number 14500801 was created but a different aircraft with serial number 145801 already existed.

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