This data sheet, which is part of Type Certificate No. 2005T13, prescribes conditions and limitations under which the product, for which the Type Certificate was issued, meets the airworthiness requirements of the Brazilian Civil Aviation Regulations.

ERJ 190-100 MODELS (Transport Category).

I - ERJ 190-100 STD, approved on 30 August 2005.
II - ERJ 190-100 LR, approved on 30 August 2005.
III - ERJ 190-100 IGW, approved on 30 August 2005.
IV - ERJ 190-100 ECJ, approved on 30 October 2007.
V - ERJ 190-100 SR, approved on 21 January 2010.

ENGINE

2 (two) General Electric Engines (GE) model (see Note 9):
For ERJ 190-100 STD, LR, and IGW: CF34-10E5, CF34-10E5A1, CF34-10E6, CF34-10E6A1, or CF34-10E7;
For ERJ 190-100 ECJ: CF34-10E7-B or CF34-10E6; and
For ERJ 190-100 SR: CF34-10E5A1 or CF34-10E7.

AIRSPEED LIMITS

<table>
<thead>
<tr>
<th>Maximum operating limit speed ((V_{MO})):</th>
<th>Maximum flap extended speed ((V_{FE})):</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 to 2 438 m*: 556 km/h (300 keas)</td>
<td>Flap Position 1: 426 km/h (230 keas)</td>
</tr>
<tr>
<td>3 048 to 8 805 m*: 593 km/h (320 keas)</td>
<td>Flap Position 2: 398 km/h (215 keas)</td>
</tr>
<tr>
<td>8 805 to 12 497 m: 0.82 Mach</td>
<td>Flap Position 3: 370 km/h (200 keas)</td>
</tr>
<tr>
<td>*Linear variation from 2 438 to 3 048 m.</td>
<td>Flap Position 4: 333 km/h (180 keas)</td>
</tr>
<tr>
<td></td>
<td>Flap Position 5: 333 km/h (180 keas)</td>
</tr>
<tr>
<td></td>
<td>Flap Position Full: 306 km/h (165 keas)</td>
</tr>
</tbody>
</table>
### C. G. RANGE

**Maneuvering speed** \( (V_A) \) – **ERJ 190-100 STD, LR, IGW, and SR**:

<table>
<thead>
<tr>
<th>Height (m)</th>
<th>Speed (km/h)</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>463</td>
<td></td>
</tr>
<tr>
<td>7 800</td>
<td>512</td>
<td></td>
</tr>
<tr>
<td>9 962</td>
<td>515</td>
<td></td>
</tr>
<tr>
<td>9 962 to 12 497</td>
<td>0.82 Mach</td>
<td></td>
</tr>
</tbody>
</table>

*Linear variation between 0, 7 800, and 9 962 m.*

**Maneuvering speed** \( (V_A) \) – **ERJ 190-100 ECJ**:

<table>
<thead>
<tr>
<th>Height (m)</th>
<th>Speed (km/h)</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 to 4 572</td>
<td>491</td>
<td></td>
</tr>
<tr>
<td>7 800</td>
<td>512</td>
<td></td>
</tr>
<tr>
<td>9 962</td>
<td>515</td>
<td></td>
</tr>
<tr>
<td>9 962 to 12 497</td>
<td>0.82 Mach</td>
<td></td>
</tr>
</tbody>
</table>

*Linear variation between 4 572, 7 800, and 9 962 m.*

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

| 47 790 kg | 16 117 to 16 953 mm (6% to 28.7% MAC) | 50 300 kg | 16 220 to 16 912 mm (8.8% to 27.6% MAC) |
| 47 000 kg | 16 117 to 16 984 mm (6% to 29% MAC) | 48 090 kg | 16 117 to 16 945 mm (6% to 28.5% MAC) |
| 37 000 kg | 16 117 to 16 964 mm (6% to 29% MAC) | 47 000 kg | 16 117 to 16 964 mm (6% to 29% MAC) |
| 31 500 kg | 16 117 to 16 839 mm (6% to 25.6% MAC) | 37 000 kg | 16 117 to 16 964 mm (6% to 29% MAC) |
| 30 600 kg | 16 817 mm (25% MAC) | 31 500 kg | 16 117 to 16 839 mm (6% to 25.6% MAC) |
| 28 000 kg | 16 552 to 16 758 mm (17% to 23.4% MAC) | 30 600 kg | 16 817 mm (25% MAC) |

**Maximum loading gear extended speed** \( (V_{LE}) \):

| 491 km/h (265 keas) |

**Maximum tire ground speed**:

362 km/h (225 mph)

---

**190-100 STD**

- **Landing Gear Extended**
  - 47 790 kg: 16 043 to 17 026 mm (4% to 30.7% MAC)
  - 47 000 kg: 16 043 to 17 037 mm (4% to 31% MAC)
  - 37 000 kg: 16 043 to 17 037 mm (4% to 31% MAC)
  - 31 500 kg: 16 043 to 16 912 mm (4% to 27.6% MAC)
  - 28 000 kg: 16 448 to 16 831 mm (15% to 25.4% MAC)
  - 30 000 kg: 16 817 mm (25% MAC)

- **Flight Limit Extension**
  - 47 790 kg: 16 043 to 17 026 mm (4% to 30.7% MAC)
  - 47 000 kg: 16 043 to 17 037 mm (4% to 31% MAC)
  - 37 000 kg: 16 043 to 17 037 mm (4% to 31% MAC)
  - 31 500 kg: 16 043 to 16 912 mm (4% to 27.6% MAC)
  - 28 000 kg: 16 448 to 16 831 mm (15% to 25.4% MAC)

**190-100 LR**

- **Landing Gear Extended**
  - 47 790 kg: 16 043 to 17 026 mm (4% to 30.7% MAC)
  - 47 000 kg: 16 043 to 17 037 mm (4% to 31% MAC)
  - 37 000 kg: 16 043 to 17 037 mm (4% to 31% MAC)
  - 31 500 kg: 16 043 to 16 912 mm (4% to 27.6% MAC)
  - 28 000 kg: 16 448 to 16 831 mm (15% to 25.4% MAC)

**190-100 IGW**

- **Landing Gear Extended**
  - 51 800 kg: 16 290 to 16 890mm (10.7% to 27% MAC)
  - 48 090 kg: 16 117 to 16 945 mm (6% to 29.5% MAC)
  - 47 000 kg: 16 117 to 16 964 mm (6% to 29% MAC)
  - 37 000 kg: 16 117 to 16 964 mm (6% to 29% MAC)
  - 31 500 kg: 16 117 to 16 839 mm (6% to 25.6% MAC)
  - 30 600 kg: 16 817 mm (25% MAC)
  - 28 000 kg: 16 552 to 16 758 mm (17% to 23.4% MAC)

**190-100 ECJ**

- **Landing Gear Extended**
  - 51 800 kg: 16 290 to 16 890mm (10.7% to 27% MAC)
  - 48 090 kg: 16 117 to 16 945 mm (6% to 29.5% MAC)
  - 47 000 kg: 16 117 to 16 964 mm (6% to 29% MAC)
  - 37 000 kg: 16 117 to 16 964 mm (6% to 29% MAC)
  - 31 500 kg: 16 117 to 16 839 mm (6% to 25.6% MAC)
  - 30 600 kg: 16 817 mm (25% MAC)
  - 28 000 kg: 16 552 to 16 758 mm (17% to 23.4% MAC)

* (Values between 29 500 and 48 090 kg are valid for all ERJ 190-100 ECJ airplanes)
C. G. RANGE (cont’d)

<table>
<thead>
<tr>
<th>Flight Limit Extension</th>
<th>190-100 IGW (cont’d)</th>
<th>190-100 ECJ (cont’d)</th>
</tr>
</thead>
<tbody>
<tr>
<td>51 800 kg:</td>
<td>16 216 to 16 964 mm</td>
<td>54 500 kg:</td>
</tr>
<tr>
<td></td>
<td>(8.7% to 29% MAC)</td>
<td>(12.1% to 27.9% MAC)</td>
</tr>
<tr>
<td>48 090 kg:</td>
<td>16 043 to 17 019 mm</td>
<td>51 800 kg*:</td>
</tr>
<tr>
<td></td>
<td>(4% to 30.5% MAC)</td>
<td></td>
</tr>
<tr>
<td>47 000 kg:</td>
<td>16 043 to 17 037 mm</td>
<td>48 090 kg:</td>
</tr>
<tr>
<td></td>
<td>(4% to 31% MAC)</td>
<td>(4% to 30.5% MAC)</td>
</tr>
<tr>
<td>37 000 kg:</td>
<td>16 043 to 17 037 mm</td>
<td>47 000 kg:</td>
</tr>
<tr>
<td></td>
<td>(4% to 31% MAC)</td>
<td>(4% to 31% MAC)</td>
</tr>
<tr>
<td>31 500 kg:</td>
<td>16 043 to 16 912 mm</td>
<td>37 000 kg:</td>
</tr>
<tr>
<td></td>
<td>(4% to 27.6% MAC)</td>
<td>(4% to 31% MAC)</td>
</tr>
<tr>
<td>30 600 kg:</td>
<td>16 890 mm:</td>
<td>31 500 kg:</td>
</tr>
<tr>
<td></td>
<td>(27% MAC)</td>
<td>16 043 to 16 912 mm</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(4% to 27.6% MAC)</td>
</tr>
<tr>
<td>- -</td>
<td>30 600 kg:</td>
<td>16 890 mm:</td>
</tr>
<tr>
<td>- -</td>
<td></td>
<td>(27% CMA)</td>
</tr>
</tbody>
</table>

* Applicable only to airplanes s/n 19000109 to 19000225 without SB190LIN-28-0011 incorporated.

<table>
<thead>
<tr>
<th>(Landing Gear Extended)</th>
<th>190-100 SR</th>
</tr>
</thead>
<tbody>
<tr>
<td>45 990 kg:</td>
<td>16 117 to 16 964 mm</td>
</tr>
<tr>
<td></td>
<td>(6% to 29% MAC)</td>
</tr>
<tr>
<td>37 000 kg:</td>
<td>16 117 to 16 964 mm</td>
</tr>
<tr>
<td></td>
<td>(6% to 29% MAC)</td>
</tr>
<tr>
<td>31 500 kg:</td>
<td>16 117 to 16 839 mm</td>
</tr>
<tr>
<td></td>
<td>(6% to 25.6% MAC)</td>
</tr>
<tr>
<td>30 600 kg:</td>
<td>16 817 mm:</td>
</tr>
<tr>
<td></td>
<td>(25% MAC)</td>
</tr>
<tr>
<td>28 000 kg:</td>
<td>16 552 to 16 758 mm</td>
</tr>
<tr>
<td></td>
<td>(17% to 23.4% MAC)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>(Flight Limit Extension)</th>
<th>190-100 SR</th>
</tr>
</thead>
<tbody>
<tr>
<td>45 990 kg:</td>
<td>16 043 to 17 037 mm</td>
</tr>
<tr>
<td></td>
<td>(4% to 31% MAC)</td>
</tr>
<tr>
<td>37 000 kg:</td>
<td>16 043 to 17 037 mm</td>
</tr>
<tr>
<td></td>
<td>(4% to 31% MAC)</td>
</tr>
<tr>
<td>31 500 kg:</td>
<td>16 043 mm</td>
</tr>
<tr>
<td></td>
<td>(4% MAC)</td>
</tr>
<tr>
<td>28 000 kg:</td>
<td>16 448 to 16 831 mm</td>
</tr>
<tr>
<td></td>
<td>(15% to 25.4% MAC)</td>
</tr>
</tbody>
</table>

Linear variation between the given points.
Moment due to landing gear retraction (the aircraft CG is moved forward with the retraction):
- -418 500 kg x mm.
- -414 100 kg x mm (for ERJ 190-100 ECJ, except for airplanes S/N 19000109 to 19000225 without SB190LIN-28-0011 incorporated).

For ERJ 190-100 STD, LR, IGW, and SR:
The area limited by points: 31 500 kg (6% MAC), 28 000 kg (17% MAC), 28 000 kg (23.4% MAC), 37 000 kg (29% MAC), 40 400 kg (29% MAC), 30 100 kg (22% MAC), 29 500 kg (18.4% MAC) is not allowed for takeoff.

For ERJ 190-100 ECJ:
The area limited by points: 30 100 kg (22% MAC), 30 600 kg (25% MAC), 37 000 kg (29% MAC), 40 400 kg (29% MAC), is not allowed for takeoff.

MAXIMUM WEIGHTS

<table>
<thead>
<tr>
<th>Taxi and Ramp:</th>
<th>190-100 STD</th>
<th>190-100 LR</th>
<th>190-100 IGW</th>
<th>190-100 ECJ</th>
<th>190-100 SR</th>
</tr>
</thead>
<tbody>
<tr>
<td>47 950 kg</td>
<td>50 460 kg</td>
<td>51 960 kg</td>
<td>54 700 kg*</td>
<td>51 960 kg*</td>
<td>46 150 kg</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Takeoff:</th>
<th>47 790 kg</th>
<th>46 000 kg</th>
<th>45 000 kg</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>43 600 kg</td>
<td>44 000 kg</td>
<td>43 740 kg</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Takeoff:</th>
<th>50 300 kg</th>
<th>49 990 kg</th>
<th>47 790 kg</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>46 000 kg</td>
<td>45 000 kg</td>
<td></td>
</tr>
<tr>
<td></td>
<td>44 900 kg</td>
<td>44 600 kg</td>
<td>44 000 kg</td>
</tr>
<tr>
<td></td>
<td>51 800 kg</td>
<td>47 790 kg</td>
<td>46 000 kg</td>
</tr>
<tr>
<td></td>
<td>50 000 kg</td>
<td>47 790 kg</td>
<td></td>
</tr>
<tr>
<td></td>
<td>49 990 kg</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>47 790 kg</td>
<td>46 000 kg</td>
<td>44 900 kg</td>
</tr>
<tr>
<td></td>
<td>44 600 kg</td>
<td>44 000 kg</td>
<td></td>
</tr>
<tr>
<td></td>
<td>54 500 kg</td>
<td>45 360 kg</td>
<td>43 092 kg</td>
</tr>
<tr>
<td></td>
<td>45 990 kg</td>
<td>49 990 kg</td>
<td></td>
</tr>
<tr>
<td></td>
<td>49 990 kg</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>50 300 kg</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

| Landing:       | 43 000 kg  |
|----------------|------------|-------------|-------------|-------------|-------------|
| 43 000 kg      | 44 000 kg  | 44 000 kg*  | 43 000 kg  |
MAXIMUM WEIGHTS (cont’d)

<table>
<thead>
<tr>
<th></th>
<th>190-100 STD (cont’d)</th>
<th>190-100 LR (cont’d)</th>
<th>190-100 IGW (cont’d)</th>
<th>190-100 ECJ (cont’d)</th>
<th>190-100 SR (cont’d)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Zero Fuel:</td>
<td>40 800 kg</td>
<td>40 800 kg</td>
<td>40 900 kg</td>
<td>40 900 kg*</td>
<td>40 800 kg</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>36 500 kg</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>35 250 kg*</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>34 570 kg*</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Considering the following service bulletins applied:

(1) SB 190-00-0056
(5) SB LIN 190-00-0024
(9) SB 190-00-0064
(13) SB 190-00-0058
(17) SB LIN 190-00-0018
(21) SB LIN 190-00-0012-00
(2) SB 190-00-0054
(6) SB 190-00-0002
(10) SB 190-00-0062
(14) SB 190-00-0020
(18) SB LIN 190-00-0017
(22) SB 190-00-0089
(3) SB 190-00-0052
(7) SB 190-00-0032
(11) SB 190-00-0032
(15) SB 190-00-0034
(19) SB LIN 190-00-0016
(23) SB 190-00-0087
(4) SB 190-00-0050
(8) SB 190-00-0012
(12) SB 190-00-0060
(16) SB 190-00-0008
(20) SB LIN 190-00-0007-00

*Applicable only to airplanes S/N 19000109 to 19000225 without SB190LIN-28-0011 incorporated.

MAXIMUM PASSENGERS

114 Passengers (ERJ 190-100 STD, ERJ 190-100 LR, and ERJ 190-100 IGW).
99 Passengers (ERJ 190-100 STD, ERJ 190-100 LR, and ERJ 190-100 IGW with DCA 0190-011-00066-2017 incorporated).
98 Passengers (ERJ 190-100 SR).
19 Passengers (ERJ 190-100 ECJ), as per RBHA/14 CFR Part 25.807(g) (see Note 4).

MAXIMUM BAGGAGE

<table>
<thead>
<tr>
<th></th>
<th>ERJ 190-100 STD, LR, IGW, and SR</th>
<th>ERJ 190-100 ECJ</th>
</tr>
</thead>
<tbody>
<tr>
<td>Forward cargo compartment (maximum load):</td>
<td>1 850 kg</td>
<td>320 kg</td>
</tr>
<tr>
<td>Aft cargo compartment (maximum load):</td>
<td>1 650 kg</td>
<td>1 040 kg</td>
</tr>
</tbody>
</table>

SERIAL NUMBERS ELIGIBLE

For ERJ 190-100 STD, ERJ 190-100 LR, and ERJ 190-100 IGW:
19000002, 19000004, 19000006, and subsequent.

For ERJ 190-100 ECJ:
19000109 and subsequent.

For ERJ 190-100 SR:
19000339 and subsequent.

ERJ 190-200 MODELS (Transport Category).


ENGINE

2 (two) General Electric Engines (GE) models CF34-10E5, CF34-10E5A1, CF34-10E6, CF34-10E6A1, or CF34-10E7 (see Note 9).

AIRSPEED LIMITS

<table>
<thead>
<tr>
<th>Maximum operating limit speed (VMO):</th>
<th>Maneuvering speed (VU):</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 to 2 438 m*: 556 km/h (300 keas)</td>
<td>469 km/h (253 keas)</td>
</tr>
<tr>
<td>3 048 to 8 805 m*: 593 km/h (320 keas)</td>
<td>515 km/h (278 keas)</td>
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<td>8 805 to 12 497 m: 0.82 Mach</td>
<td>517 km/h (279 keas)</td>
</tr>
<tr>
<td>*Linear variation from 2 438 to 3 048 m.</td>
<td>9 920 to 12 497 m: 0.82 Mach</td>
</tr>
<tr>
<td>*Linear variation between 0, 7 800, and 9 920 m.</td>
<td></td>
</tr>
</tbody>
</table>
**AIRSPEED LIMITS (cont'd)**

<table>
<thead>
<tr>
<th>Flap Position</th>
<th>Maximum flap extended speed ($V_{FE}$):</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>426 km/h (230 keas)</td>
</tr>
<tr>
<td>2</td>
<td>398 km/h (215 keas)</td>
</tr>
<tr>
<td>3</td>
<td>370 km/h (200 keas)</td>
</tr>
<tr>
<td>4</td>
<td>333 km/h (180 keas)</td>
</tr>
<tr>
<td>Full</td>
<td>306 km/h (165 keas)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Maximum landing gear operating speed ($V_{LO}$):</th>
</tr>
</thead>
<tbody>
<tr>
<td>Retraction: 463 km/h (250 keas)*</td>
</tr>
<tr>
<td>Extension: 491 km/h (265 keas)*</td>
</tr>
</tbody>
</table>

| Area limited by the points: | 30 100 kg (22% MAC), 30 600 kg (27% MAC), 38 000 kg (31% MAC), and 43 400 kg (31% MAC) is not allowed for takeoff. |

Maximum landing gear extended speed ($V_{LE}$): 491 km/h (265 kcas)

Maximum tire ground speed: 362 km/h (225 mph)

**C. G. RANGE**

<table>
<thead>
<tr>
<th>(Landing Gear Extended)</th>
<th>190-200 STD</th>
<th>190-200 LR</th>
</tr>
</thead>
<tbody>
<tr>
<td>48 790 kg</td>
<td>16 966 to 17 849 mm (7% to 31% MAC)</td>
<td>17 058 to 17 849 mm (9.5 to 31% MAC)</td>
</tr>
<tr>
<td>38 000 kg</td>
<td>16 966 to 17 849 mm (7% to 31% MAC)</td>
<td>48 790 kg: 16 966 to 17 849 mm (7% to 31% MAC)</td>
</tr>
<tr>
<td>31 800 kg</td>
<td>16 966 to 17 724 mm (7% to 27.6% MAC)</td>
<td>38 000 kg: 16 966 to 17 849 mm (7% to 31% MAC)</td>
</tr>
<tr>
<td>31 600 kg</td>
<td>17 702 mm (27% MAC)</td>
<td>31 800 kg: 16 966 to 17 724 mm (7% to 27.6% MAC)</td>
</tr>
<tr>
<td>29 500 kg</td>
<td>17 385 mm (18.4% MAC)</td>
<td>30 600 kg: 17 702 mm (27% MAC)</td>
</tr>
<tr>
<td>28 000 kg</td>
<td>17 552 to 16 758 mm (17% to 23.4% MAC)</td>
<td>29 500 kg: 17 385 mm (18.4% MAC)</td>
</tr>
</tbody>
</table>

| (Flight Limit Extension) | | |
|-------------------------| | |
| 48 790 kg               | 16 992 to 17 905 mm (5% to 32.5% MAC) | 50 790 kg: 16 966 to 17 849 mm (7% to 31% MAC) |
| 38 000 kg               | 16 992 to 17 905 mm (5% to 32.5% MAC) | 48 790 kg: 16 992 to 17 905 mm (5% to 32.5% MAC) |
| 31 800 kg               | 16 992 to 17 776 mm (5% to 29% MAC) | 38 000 kg: 16 992 to 17 905 mm (5% to 32.5% MAC) |
| 30 600 kg               | 17 757 mm (28.5% MAC) | 31 800 kg: 16 992 to 17 776 mm (5% to 29% MAC) |
| 48 790 kg               | 16 966 to 17 849 mm (7% to 31% MAC) | 30 600 kg: 17 757 mm (28.5% MAC) |
| 38 000 kg               | 16 966 to 17 849 mm (7% to 31% MAC) | 30 600 kg: - |

<table>
<thead>
<tr>
<th>(Landing Gear Extended)</th>
<th>190-200 IGW</th>
</tr>
</thead>
<tbody>
<tr>
<td>52 290 kg</td>
<td>17 124 to 17 849 mm (11.3 to 31% MAC)</td>
</tr>
<tr>
<td>48 790 kg</td>
<td>16 966 to 17 849 mm (7% to 31% MAC)</td>
</tr>
<tr>
<td>38 000 kg</td>
<td>16 966 to 17 849 mm (7% to 31% MAC)</td>
</tr>
<tr>
<td>31 800 kg</td>
<td>16 966 to 17 724 mm (7% to 27.6% MAC)</td>
</tr>
<tr>
<td>30 600 kg</td>
<td>17 702 mm (27% MAC)</td>
</tr>
<tr>
<td>29 500 kg</td>
<td>17 385 mm (18.4% MAC)</td>
</tr>
</tbody>
</table>

| (Flight Limit Extension) | | |
|-------------------------| | |
| 52 290 kg               | 17 050 to 17 849 mm (9.3 to 31% MAC) |
| 48 790 kg               | 16 992 to 17 905 mm (5% to 32.5% MAC) |
| 38 000 kg               | 16 992 to 17 905 mm (5% to 32.5% MAC) |
| 31 800 kg               | 16 992 to 17 776 mm (5% to 29% MAC) |
| 30 600 kg               | 17 757 mm (28.5% MAC) |

Linear variation between the given points.

Moment due to landing gear retraction: -418 500 kg x mm (the aircraft CG is moved forward with the retraction).

The area limited by the points: 30 100 kg (22% MAC), 30 600 kg (27% MAC), 38 000 kg (31% MAC), and 43 400 kg (31% MAC) is not allowed for takeoff.
MAXIMUM WEIGHTS

<table>
<thead>
<tr>
<th></th>
<th>190-200 STD</th>
<th>190-200 LR</th>
<th>190-200 LR</th>
</tr>
</thead>
<tbody>
<tr>
<td>Taxi and Ramp:</td>
<td>48 950 kg</td>
<td>50 950 kg</td>
<td>52 450 kg</td>
</tr>
<tr>
<td>Takeoff:</td>
<td>48 790 kg</td>
<td>50 790 kg</td>
<td>52 290 kg</td>
</tr>
<tr>
<td></td>
<td>46 000 kg</td>
<td>50 490 kg</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>48 790 kg</td>
<td></td>
</tr>
<tr>
<td>Landing:</td>
<td>45 000 kg</td>
<td>45 000 kg</td>
<td>45 800 kg</td>
</tr>
<tr>
<td>Zero Fuel:</td>
<td>42 500 kg</td>
<td>42 500 kg</td>
<td>42 600 kg</td>
</tr>
</tbody>
</table>

Considerando os seguintes boletins de serviço aplicados:
(1) SB 190-00-0038 and SB 190-00-0039  
(2) SB 190-00-0044  
(3) SB 190-00-0076

MAXIMUM PASSENGERS

124 Passengers.

MAXIMUM BAGGAGE

<table>
<thead>
<tr>
<th>Compartment</th>
<th>Maximum Load</th>
</tr>
</thead>
<tbody>
<tr>
<td>Forward cargo Compartment</td>
<td>1 900 kg</td>
</tr>
<tr>
<td>Aft cargo Compartment</td>
<td>1 800 kg</td>
</tr>
</tbody>
</table>

SERIAL NUMBERS ELIGIBLE

19000005, 19000029, and subsequent.

ERJ 190-300 MODEL (Transport Category).

IX - ERJ 190-300, approved on 28 February 2018.

ENGINE

2 (two) Pratt & Whitney Engine PW1900G series, models: PW1919G and PW1922G.

AIRSPEED LIMITS

<table>
<thead>
<tr>
<th>Speed Limit</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maximum operating limit speed (V_MO):</td>
<td>Maneuvering speed (V_A):</td>
</tr>
<tr>
<td>0 to 2 438 m*:</td>
<td>556 km/h (300 keas)</td>
</tr>
<tr>
<td>3 048 to 8 805 m*:</td>
<td>593 km/h (320 keas)</td>
</tr>
<tr>
<td>8 805 to 12 497 m*:</td>
<td>0.82 Mach</td>
</tr>
<tr>
<td>*Linear variation from 2 438 to 3 048 m.</td>
<td>*Linear variation between 4 572 and 8 805 m.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Flap Position</th>
<th>Maximum flap extended speed (V_FE):</th>
<th>Maximum landing gear operating speed (V_LO):</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>426 km/h (230 keas)</td>
<td>Retraction: 407.5 km/h (220 keas)</td>
</tr>
<tr>
<td>2</td>
<td>398 km/h (215 keas)</td>
<td>Extension: 463 km/h (250 keas)</td>
</tr>
<tr>
<td>3</td>
<td>370 km/h (200 keas)</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>333 km/h (180 keas)</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>333 km/h (180 keas)</td>
<td></td>
</tr>
<tr>
<td>Full</td>
<td>306 km/h (165 keas)</td>
<td></td>
</tr>
</tbody>
</table>

| Maximum landing gear extended speed (V_LE): | 491 km/h (265 kias) |

Maximum tire ground speed: 362 km/h (225 mph)
C. G. RANGE

<table>
<thead>
<tr>
<th>190-300</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>56400 kg:</td>
<td>15660 to 16246 mm (18% to 34% MAC)</td>
</tr>
<tr>
<td>49050 kg:</td>
<td>15660 to 16503 mm (18% to 41% MAC)</td>
</tr>
<tr>
<td>46700 kg:</td>
<td>15660 to 16503 mm (18% to 41% MAC)</td>
</tr>
<tr>
<td>40300 kg:</td>
<td>15660 to 16503 mm (18% to 41% MAC)</td>
</tr>
<tr>
<td>37200 kg:</td>
<td>15660 to 16367 mm (18% to 37.3% MAC)</td>
</tr>
<tr>
<td>32700 kg:</td>
<td>15806 to 16173 mm (22% to 34% MAC)</td>
</tr>
<tr>
<td>56400 kg:</td>
<td>15586 to 16319 mm (16% to 36% MAC)</td>
</tr>
<tr>
<td>49050 kg:</td>
<td>15586 to 16576 mm (16% to 43% MAC)</td>
</tr>
<tr>
<td>40300 kg:</td>
<td>15586 to 16576 mm (16% to 43% MAC)</td>
</tr>
<tr>
<td>37200 kg:</td>
<td>15586 to 16440 mm (16% to 39.3% MAC)</td>
</tr>
<tr>
<td>32700 kg:</td>
<td>15733 to 16246 mm (20% to 34% MAC)</td>
</tr>
</tbody>
</table>

Linear variation between the given points.

Moment due to landing gear retraction: \(-787,046\) kg x mm (the aircraft CG is moved forward with the retraction).

The area limited by the points: 36085 kg (36% MAC), 40300 kg (41% MAC) e 49050 kg (41% MAC) is not allowed for takeoff.

MAXIMUM WEIGHTS

<table>
<thead>
<tr>
<th>190-300</th>
</tr>
</thead>
<tbody>
<tr>
<td>Taxi and Ramp:</td>
</tr>
<tr>
<td>Takeoff:</td>
</tr>
<tr>
<td>Landing:</td>
</tr>
<tr>
<td>Zero Fuel:</td>
</tr>
</tbody>
</table>

MAXIMUM PASSENGERS

114 Passengers.

MAXIMUM BAGGAGE

- Forward cargo Compartment (maximum Load): 1590 kg
- Aft cargo Compartment (maximum Load): 1910 kg

SERIAL NUMBERS ELIGIBLE

19020009, and subsequent.

DATA PERTINENT TO ALL MODELS

ENGINE LIMITS

**ERJ 190-100 and ERJ 190-200 Models:**

Operating conditions:

- **Normal takeoff**\(^{(1)}\)
  - ITT max. CF34-10E6: 938 °C
  - ITT max. CF34-10E6A1: 983 °C
  - ITT max. CF34-10E5: 939 °C
  - ITT max. CF34-10E5A1: 983 °C
  - ITT max. CF34-10E7: 943 °C

- **Maximum takeoff (ATTCS)**\(^{(1)(4)}\)
  - ITT max.: 983 °C
  - N1 max. (% 6 325): 100 %
  - N2 max. (% 18 018): 100 %

- **Maximum continuous:**
### Engine Limits (cont'd):

#### ERJ 190-300 Model:

**Operating conditions:**

<table>
<thead>
<tr>
<th>Normal takeoff (1)</th>
<th>ITT max. PW1919G</th>
<th>1 054 °C</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>ITT max. PW1922G</td>
<td>1 054 °C</td>
</tr>
<tr>
<td>N1 max. (% 10 600)</td>
<td>100 %</td>
<td></td>
</tr>
<tr>
<td>N2 max. (% 24 470)</td>
<td>100 %</td>
<td></td>
</tr>
</tbody>
</table>

| Maximum continuous: | 163 °C |
| Minimum for starting: | - 40 °C |

**Ground Start:**

| ITT max. | 1 054 °C |

**In flight start:**

| ITT max. | 1 054 °C |

**Oil temperature:**

- Maximum continuous: 155 °C
- Minimum for starting: - 40 °C

**Oil pressure:**

- Maximum transient (3) (after cold start): 5 psig (min.) 250 psig (max.)
- Minimum pressure:
  - Takeoff power: 70 psid
  - Steady state idle: 25 psid

---

(1) Takeoff and go-around power is time limited to 5 minutes for All Engines Operating (AEO) condition.

(2) Takeoff and go-around power is time limited to 5 minutes for One Engine Inoperative (OEI) condition.

(3) The minimum oil temperature is a function of ambient temperature and fuel tank temperature and is defined to ensure adequate engine lubrication and fuel system heating. Takeoff power is prohibited while the message ENG 1 (2) WARM UP is displayed on the EICAS.

(4) The minimum oil temperature is 174°C for up to 20 minutes.
FUEL

**ERJ 190-100 and ERJ-190-200 Models:**
- Brazilian Specification ANP No. 1/2003 - QAV1;
- ASTM Specification D-1655 JET A or JET A1;
- Specification MIL-T-83133A JP-8;
- Russian GOST 10227- 86, TS-1, TS-1 Premium, and RT;
- Ukrainian GSTU 320.00149943.007 RT and GSTU 320.00149943.011 TS-1;

**ERJ 190-300 Model:**
- Brazilian Specification RANP37-2009 and RANP38-2011 from ANP, QAV-1 Jet Fuel;
- ASTM Specification D1655, Grades JET A and JET A-1 neat (no additives);
- Specification DEF STAN 91-91 JET A-1;
- Specification MIL-DTL-83133 JP-8 (NATO codes F-34 / F-35) and JP-8+100 (NATO code F-37);
- Specification MIL-DTL-5624 JP-5;
- Russian Specification GOST 10227-86 grades TS-1 and RT;
- Ukrainian Specification GSTU 320.00149943.011 grade TS-1 and .007 grade RT;
- Chinese Specification GB 6537-2006, No.3.

FUEL CAPACITY

**ERJ 190-100 and ERJ 190-200 Models:**
Maximum usable fuel: 16 152.6 liters (2 tanks of 8 076.3 liters with CG at +16 378 mm).
Unusable fuel: 113.4 liters (56.7 liters at 0.811 kg/liter in each tank).

For **ERJ 190-100 ECJ Model** (except for airplanes S/N 19000109 to 19000225, without SB190LIN-28-0011 incorporated):
Unusable fuel: 165.2 liters (72.1 liters at 0.803 kg/liter in each wing tank and 21 liters in auxiliary tanks).

**ERJ 190-300 Model:**
Maximum usable fuel: 17 060 liters (5 460 liters in wing tanks and 11 600 liters in auxiliary fuel tanks).
Unusable fuel: 74.4 liters (37.2 liters at 0.811 kg/liter in each wing tank).

APU

**ERJ 190-100 and ERJ 190-200 Models:**
Hamilton Sundstrand model APS 2300.

**ERJ 190-300 Model:**
Pratt & Whitney model APS2600[E].

APU LIMITS

**ERJ 190-100 and ERJ 190-200 Models:**
Maximum RPM: \(^{108}\%\)
Maximum EGT: \(717\)°C (running) \(1 032\)°C (start)
Other limitations as stated in Hamilton Sundstrand Document No. ESR 1235.
APU LIMITS (cont’d)

ERJ 190-300 Model:
Maximum RPM: 108%
Maximum EGT(1): 1032 °C (start)
(1) There is no time limitation for operating the APU on ground or in flight with EGT in the amber range.

Other limitations as stated in document N° ER8746 (APS2600 Installation and Operating Instructions rev. B).

MINIMUM CREW

2 (two): pilot and copilot.

OIL

Engine, APU, and IDG: MIL-PRF-7808 or MIL-PRF-23699.

LUBRICANT OIL CAPACITY

ERJ 190-100 and ERJ 190-200 Models:
Per engine: Total (liters / US quarts): 14.7 (15.6)
Usable (liters / US quarts): 13.5 (14.4)

ERJ 190-300 Model:
Per engine: Total (liters / US quarts): 24.4 (25.8)
Usable (liters / US quarts): 6.1 (6.4)

HIDRAULIC OIL TANK CAPACITY

ERJ 190-100 and ERJ 190-200 Models:
Per system: Sis1 = 37.0 liters / Sis2 = 50.6 liters / Sis3 = 13.5 liters.
Total (three systems): 101.1 liters

ERJ 190-300 Model:
Per system: Sis1 =16.4 liters / Sis2 = 21.3 liters / Sis3 = 8.2 liters.
Total (three systems): 45.9 liters

MAXIMUM ALTITUDES

ERJ 190-100 and ERJ 190-200 Models:
Operating: 12 497 m (41 000 ft)
Takeoff and landing: 3 048 m (10 000 ft) standard altitude
4 267 m (14 000 ft) post-Mod SB 190-35-0005

ERJ 190-300 Model:
Operating: 12 497 m (41 000 ft)
Takeoff and landing: 4 267 m (14 000 ft)

TEMPERATURE OPERATING LIMITS

ERJ 190-100 and ERJ 190-200 Models:

<table>
<thead>
<tr>
<th>Altitude:</th>
<th>Maximum:</th>
<th>Minimum:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sea Level:</td>
<td>+52 °C</td>
<td>-54 °C (ground operation)</td>
</tr>
<tr>
<td>7 620 m (25 000 ft):</td>
<td>+0.0 °C</td>
<td>-54 °C (only for ERJ 190-100 ECJ)</td>
</tr>
<tr>
<td>11 000 m (36 089 ft):</td>
<td>-21.5 °C</td>
<td>-65 °C</td>
</tr>
</tbody>
</table>
**ERJ 190-300 Model:**

<table>
<thead>
<tr>
<th>Altitude</th>
<th>Maximum:</th>
<th>Minimum:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sea level:</td>
<td>+54 °C</td>
<td>-54 °C</td>
</tr>
<tr>
<td>3 048 m (10 000 ft):</td>
<td>+35 °C</td>
<td>-54 °C</td>
</tr>
<tr>
<td>7 620 m (25 000 ft):</td>
<td>+0.0 °C</td>
<td>-70 °C</td>
</tr>
<tr>
<td>12 497 m (41 000 ft):</td>
<td>-21.5 °C</td>
<td>-70 °C</td>
</tr>
</tbody>
</table>

**LIMIT OF FUEL TANK TEMPERATURE**

-40°C (-40 °F) minimum.

**CONTROL SURFACE MOVEMENTS**
(see AMM for tolerances)

**ERJ 190-100 and ERJ 190-200 Models:**

- Rudder: 31.5° left, 31.5° right
- Horizontal stabilizer: 11.0° TE up, 4.0° TE down
- Aileron: 25.0° TE up, 15.0° TE down
- Elevator: 25.0° TE up, 18.0° TE down
- Ground spoilers: 60°
- Outboard spoilers: 40°

**ERJ 190-300 Model:**

- Rudder: 30.0° left, 30.0° right
- Horizontal stabilizer: 11.6° TE up, 4.4° TE down
- Aileron: 25.0° TE up, 15.0° TE down
- Elevator: 25.0° TE up, 18.0° TE down
- Ground spoilers: 60°
- Outboard spoilers: 40°

(1) For zero airspeed on the ground; maximum deflections vary according to airspeed.
(2) For zero airspeed; maximum deflections vary according to airspeed.

**ERJ 190-100 and ERJ 190-200 Models:**

<table>
<thead>
<tr>
<th>Flap setting position</th>
<th>Inboard flap (main/aft)</th>
<th>Outboard flap</th>
<th>Slat position</th>
<th>Slat position</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>0.0°/0.0°</td>
<td>0.0°</td>
<td>0.0°</td>
<td>0.0°</td>
</tr>
<tr>
<td>1</td>
<td>7.1°/15.4°</td>
<td>7.0°</td>
<td>12.0°</td>
<td>15.0°</td>
</tr>
<tr>
<td>2</td>
<td>10.1°/16.6°</td>
<td>10.1°</td>
<td>12.0°</td>
<td>15.0°</td>
</tr>
<tr>
<td>3</td>
<td>20.2°/19.2°</td>
<td>20.0°</td>
<td>12.0°</td>
<td>15.0°</td>
</tr>
<tr>
<td>4</td>
<td>20.2°/19.2°</td>
<td>20.0°</td>
<td>20.0°</td>
<td>25.0°</td>
</tr>
<tr>
<td>5</td>
<td>20.2°/19.2°</td>
<td>20.0°</td>
<td>20.0°</td>
<td>25.0°</td>
</tr>
<tr>
<td>Full</td>
<td>37.1°/22.0°</td>
<td>36.5°</td>
<td>20.0°</td>
<td>25.0°</td>
</tr>
</tbody>
</table>

**ERJ 190-300 Model:**

<table>
<thead>
<tr>
<th>Flap setting position</th>
<th>Inboard flap</th>
<th>Outboard flap</th>
<th>Slat position</th>
<th>Slat position</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>0.0°</td>
<td>0.0°</td>
<td>0.0°</td>
<td>0.0°</td>
</tr>
<tr>
<td>1</td>
<td>11.2°</td>
<td>10.6°</td>
<td>7.3°</td>
<td>8.0°</td>
</tr>
<tr>
<td>2</td>
<td>11.2°</td>
<td>10.6°</td>
<td>18.2°</td>
<td>20°</td>
</tr>
<tr>
<td>3</td>
<td>21.5°</td>
<td>22.0°</td>
<td>18.2°</td>
<td>20°</td>
</tr>
<tr>
<td>4</td>
<td>25.9°</td>
<td>26.9°</td>
<td>22.8°</td>
<td>25°</td>
</tr>
<tr>
<td>5</td>
<td>25.9°</td>
<td>26.9°</td>
<td>22.8°</td>
<td>25°</td>
</tr>
<tr>
<td>Full</td>
<td>33.0°</td>
<td>35.1°</td>
<td>22.8°</td>
<td>25°</td>
</tr>
</tbody>
</table>
Deflections shown in degrees (°) are in the planes normal to hinge lines, excepting for the flaps, which are in streamwise planes normal to wing reference plane.

Deflections of a surface supported at another movable surface are relative to the parent surface. Stabilizer deflections are relative to the airplane horizontal reference.

For tolerances, see AMM.

**DATUM**

A perpendicular plane to the fuselage centerline, located at 14 443 mm for ERJ 190-100 models, 15 256 mm for ERJ 190-200 models ahead of the wing stub front spar. This spar is located 414 mm for ERJ 190-100 and ERJ 190-200 models ahead of the wing jack point. For the ERJ 190-300, the datum is located at 13.571 m ahead of the wing jack points.

**LEVELING MEANS**

Plumb line between the points P1 to P2 located inside the landing gear compartment on the left side, as illustrated below:

![Leveling Means Diagram]

<table>
<thead>
<tr>
<th>POINT</th>
<th>X(1)</th>
<th>X(2)</th>
<th>Y</th>
<th>Z</th>
</tr>
</thead>
<tbody>
<tr>
<td>P1</td>
<td>17 955.20</td>
<td>18 768.00</td>
<td>-250.00</td>
<td>-774.87</td>
</tr>
<tr>
<td>P2</td>
<td>17 955.20</td>
<td>18 768.00</td>
<td>-250.00</td>
<td>-1 683.47</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>POINT</th>
<th>X(3)</th>
<th>Y(3)</th>
<th>Z(3)</th>
</tr>
</thead>
<tbody>
<tr>
<td>P1</td>
<td>15 881.02</td>
<td>-211.00</td>
<td>-851.49</td>
</tr>
<tr>
<td>P2</td>
<td>15 881.02</td>
<td>-211.00</td>
<td>-1 736.42</td>
</tr>
</tbody>
</table>

(1) Applicable for ERJ 190-100 models.
(2) Applicable for ERJ 190-200 models.
(3) Applicable for ERJ 190-300 model.

**MEAN AERODYNAMIC CHORD**

**ERJ 190-100 and ERJ 190-200 Models:**
Length: 3 682 mm.
Leading edge of mean aerodynamic chord:

X(1): 15 896 mm  
X(2): 16 708 mm  
Y: -5 644 mm  
Z: -663 mm

(1) Applicable for ERJ 190-100 models.  
(2) Applicable for ERJ 190-200 models.

**ERJ 190-300 Model:**
Length: 3 665 mm.
Leading edge of mean aerodynamic chord:

X: 15 000 mm  
Y: -6 308 mm  
Z: -287 mm
CERTIFICATION BASIS

**ERJ 190-100 Models:**
RBHA 25 (Airworthiness Requirements - Transport Category Aircraft), corresponding to 14 CFR Part 25, including amendments 25-1 through 25-101, plus the following amendments:

- Amendment 25-102, except paragraph 25.981(c);
- Amendment 25-103, integral;
- Amendment 25-104, integral;
- Amendment 25-105, integral;
- Amendment 25-107, except paragraph 25.735(h);
- Amendment 25-108, integral;
- Amendment 25-109, integral;
- Amendment 25-110, integral;
- Amendment 25-112, integral;
- Amendment 25-113, integral;
- Amendment 25-114, integral;
- Amendment 25-117, integral; and
- Amendment 25-120, integral.

**Note:** ERJ 190-100 auxiliary fuel tanks comply with amendment 102 paragraph 25.981(c).

**Special Condition:**

**Equivalent Level of Safety:**

**ERJ 190-100 ECJ Model:**

**Special Conditions:**
- Interaction of Systems and Structures (RBHA 21.16; RBHA/14 CFR Part 25.671 and 25.1309) – FCAR ES-06; and

**Equivalent Levels of Safety:**
- Emergency Exit Locator Sign near Type III Door (RBHA 21.21(b)(1); RBHA/14 CFR Part 25.811(d)(1)) – FCAR EI-01;
- Emergency Exit Locator Sign near Type I Door (RBHA 21.21(b)(1); RBHA/14 CFR Part 25.811(d)(3)) – FCAR EI-02;
- Emergency Exit Sign Dimensions (RBHA 21.21(b)(1); RBHA/14 CFR Part 25.812(b)(1)) – FCAR EI-03; and
- In-flight Accessible Class C Baggage Compartment (RBHA 21.21(b)(1); RBHA/14 CFR Part 25.857(c)) – FCAR EI-04.

**Exemptions:**
- Passenger Cabin Interior Doors (RBHA 11.25(b)(5); RBHA/14 CFR Part 25.813(e)) – FCAR EI-05, granted through Ordinance DAC (ANAC) No. 299/ANAC dated 18 August 2008;
- Firm Handhold (RBHA 21.21(b)(1); RBHA/14 CFR Part 25.785(j)) – FCAR EI-06, granted through Ordinance DAC (ANAC) No. 298/ANAC dated 18 August 2008; and
CERTIFICATION BASIS (cont’d)

**ERJ 190-200 Models:**
RBHA 25 (Airworthiness Requirements - Transport Category Aircraft), corresponding to 14 CFR Part 25, including amendments 25-1 through 25-101, plus the following amendments:

- Amendment 25-102, except paragraph 25.981(c);
- Amendment 25-103, integral;
- Amendment 25-104, integral;
- Amendment 25-105, integral;
- Amendment 25-107, except paragraph 25.735(h);
- Amendment 25-108, integral;
- Amendment 25-109, integral;
- Amendment 25-110, integral;
- Amendment 25-112, integral;
- Amendment 25-113, integral;
- Amendment 25-114, integral; and
- Amendment 25-117, integral.

**Applicable for ERJ 190-100 and ERJ 190-200 Models:**

**Special Conditions:**
- Interaction of Systems and Structures (RBHA 21.16; RBHA/14 CFR Part 25.671 and 25.1309) – FCAR HES-06;
- Operation without Normal Electrical Power (RBHA 21.16; RBHA/14 CFR Part 25.1165(b), 25.1309, 25.1333(b), and 25.1351) – FCAR HSI-02;
- Performance Credit for ATTCS during Go-around (RBHA 21.16; RBHA 25.117, 25.119(a), 25.121(d), 25.904, 25.1309, and Appendix I) – FCAR HDE-17; and
- Seats with Non-Traditional, Large, and Non-Metallic Panels (RBHA/14 CFR Part 25.853) – FCAR HES-44.

**Equivalent Levels of Safety:**
- Checked Maneuver Loads (RBHA 21.21(b)(1); RBHA/14 CFR Part 25.331(c)(2)) – FCAR HES-13;
- Fuel Tank Crashworthiness (RBHA 21.21(b)(1); RBHA/14 CFR Part 25.721 and 25.963(d)) – FCAR HES-19;
- Minor Crash Criteria (RBHA 21.21(b)(1); RBHA/14 CFR Part 25.721 and 25.963(d)) – FCAR HES-20;
- Emergency Exit Locator Signs (RBHA 21.21(b)(1); RBHA/14 CFR Part 25.811(d)(3)) – FCAR HES-36 (see Note 10);
- Equipment, Systems and Installations (RBHA 21.21(b)(1); RBHA/14 CFR Part 25.1309) – FCAR HSI-15;
- Cabin Ventilation - Humidity Requirement (RBHA 21.21(b)(1); RBHA/14 CFR Part 25.831(g)) – FCAR HSI-38;
CERTIFICATION BASIS (cont’d)

Applicable for ERJ 190-100 and ERJ 190-200 Models (cont’d):

Equivalent Levels of Safety (cont’d):
- Performance Credit for Use of Automatic Power Reserve (APR) during Reduced Thrust Takeoffs (RBHA 21.21(b)(1); RBHA/14 CFR Part 25.904, 25.149, and Appendix I) – FCAR HDE-16;
- Flight Critical Thrust Reverser (RBHA 21.21(b)(1); RBHA/14 CFR Part 25.933(a)(1)(ii), and 25.1309(b)(1)) – FCAR HPR-06;
- Adoption of APU Harmonized Requirements (RBHA 21.21(b)(1); RBHA/14 CFR Part 25 Subparts E, F, and G) – FCAR HPR-17;
- Lavatory Oxygen System Restoration (RBAC 21.21(b)(1); RBHA/14 CFR Part 25.1441(c) and 25.1443(c)) – ERJ 190 FCAR HSI-55;

Exemptions:
- Uncontained Engine Rotor Burst Hitting Pressurized Cabin (RBHA/14 CFR Part 25.841(a)(2)(i) and (ii)) – granted through Ordinance DAC (ANAC) No. 595/DGAC, dated 28 June 2005; and

RBAC 26 – Continued Airworthiness and Safety Improvements for Transport Category Airplanes:
- According to RBAC 21, section 21.101(g), for changes made to TC applicable provisions of RBAC 26 are included in the certification basis. For any future amendments to RBAC 26, the holder of this TC must demonstrate compliance with the applicable sections.

ERJ 190-100 and ERJ 190-200 Models:
- Compliance has been found for the following regulations at amendment 26-1: sections 26.11, 26.21, 26.23, 26.33, 26.35, 26.43, 26.45, and 26.49.

Fuel Venting and Exhaust Emission Requirements:
RBHA 34 (Fuel Venting and Exhaust Emission Requirements for Turbine Engine Powered Airplanes - Type Certification), corresponding to 14 CFR Part 34 and including the amendment effective on the date the ERJ-190 certification by ANAC.

Noise Standards:
ERJ 190-100 and ERJ 190-200 Models:
- RBHA 36 (Noise Standard - Type Certification), corresponding to ICAO Annex 16, Volume I Chapter 3, Amendment 7.

Noise standards for ERJ 190-200 LR with CF34-10E5A1 LLCN:

Optional Design Requirements:
- RBHA/14 CFR Part 25.801 – Ditching;
- RBHA/14 CFR Part 25.1403 – Wing Icing Detection Lights;
- RBHA/14 CFR Part 25.1411 and 25.1415 – Safety Equipment Required for Ditching Certification;
- RBHA/14 CFR Part 25.1419 – Ice Protection; and
ERJ 190-300 Model:

RBAC 25 – Airworthiness Standards: Transport Category Airplanes ("Requisitos de Aeronavegabilidade: Aviões de Transporte"), corresponding to U.S. 14 CFR Part 25, amendment 134, plus the following amendments:

- Amendment 25-135, integral; and
- Amendment 25-136, integral.


Special Conditions:

- CE/SC 25-065 – Condição Especial aplicável à recuperação de manobra por um sistema automático de voo com uma instalação de um sistema protetor de alta velocidade incorporado nas leis de controle de voo. "Dive Speed Definition with Speed Protection System (RBAC/14 CFR 25.335 (b)(1))" – FCAR ES-04;
- CE/SC 25-037 – Condição Especial aplicável às cargas de torque limite durante parada súbita de motor e APU. "Sudden Engine Stoppage (RBAC 21.16; RBAC/14 CFR 25.361 (b))" – FCAR ES-17;
- CE/SC 25-043 – Condição Especial aplicável ao sistema de controle eletrônico de voo com relação ao efeito das proteções de arfagem, de rolamento e de alta velocidade sobre a controlabilidade e manobrabilidade da aeronave. "Flight Envelope Protection : Pitch and Roll and High Speed Limiting Functions (RBAC/14 CFR 25.143)" – FCAR EV-03;
CERTIFICATION BASIS (cont’d)

Applicable for ERJ 190-300 Model (cont’d):

Special Conditions (cont’d):

- CE/SC 25-066 – Condição Especial aplicável aos múltiplos modos de operação do sistema de controle de voo, à operação em qualquer atitude e à notificação da tripulação acerca da posição das superfícies de controle. “Electronic Flight Control System: Control Surface Position Awareness, Multiple Modes of Operation, Flight Control in all attitudes (RBAC 21.16; RBAC 25.671)” – FCAR SM-01; and

Equivalent Levels of Safety:

- “Exit Handle Marking (RBAC/14 CFR 25.811 (e)(4))” – FCAR EI-02;
- “Protection of flight crew compartment – Reduced Energy (RBAC/14 CFR 25.795 (a)(1))” – FCAR EI-16;
- “Harmonized Requirements for Cargo, Stowage Compartments, Carry-on Articles and Equipments (RBAC/14 CFR 25.787 (a))” – FCAR EI-28;
- “Minor Obstruction to Type III Exit Provided (RBAC/14 CFR 25.813 (c)(2)(i))” – FCAR EI-29;
- “Checked Maneuver Loads (RBAC/14 CFR 25.331 (c)(2))” – FCAR ES-19;
- “Fuel Tank Integrity in a Minor Crash Scenario (RBAC/14 CFR 25.721, 25.963 (d) & 25.994)” – FCAR ES-31;
- “Casting Factors (RBAC/14 CFR 25.621)” – FCAR ES-33;
- “Proof of structure (RBAC/14 CFR 25.307)” – FCAR ES-34;
- “Performance Credit for Use of ATTCS during Reduced Takeoff Thrust (RBAC/14 CFR 25.904, 25.149, Appendix 125.4 (a))” – FCAR EV-17;
CERTIFICATION BASIS (cont’d)

Applicable for ERJ 190-300 Model (cont’d):

Equivalent Levels of Safety (cont’d):

- “Digital only Display of turbine engine high/ pressure sensor (N2), oil pressure, oil temperature and fuel flow (RBAC 21.21 (b)(1); 25.901, 25.903 (d)(2); 25.1305; 25.1309; 25.1321; 25.1322 & 25.1549)” – FCAR PR-14;
- “APU Type Certification Requirements (RBAC 21.21 (b)(1); RBAC/14 CFR Part 25 Subparts E, F and G)” – FCAR PR-18;
- “Resistance to Fire of Nacelle Cowlings (RBAC 21.21 (b)(1); RBAC 25.1193 (e)(3))” – FCAR PR-17;
- “Engine shutoff valve indication (RBAC 25.1141 (f)(2))” – FCAR PR-26;
- “ERJ 190-300 Fire Safety Requirements for Designated Fire zones and Areas adjacent to Designated Fire Zones (RBAC 21.21 (b)(1); 25.1181 (a)(6) and (b); 25.1182; 25.1191; 25.1193 (e); and; 25.1195 through 25.1203)” – FCAR PR-35;
- “Cabin Ventilation - Humidity Requirement (RBAC/14 CFR 25.831 (g))” – FCAR SM-05;
- “Determination of Minimum Oxygen Flow for the Lavatory (RBAC 25.1441; 25.1443 (c) / AD 2011-02-02)” – FCAR SM-10;
- “Crew Determination of Quantity of Oxygen in Lavatory Oxygen System Distributed Bottles – 25.1441(c) (RBAC/14 CFR 25.1441 (c) / AD 2011-02-02)” – FCAR SM-11;
- “Determination of Minimum Oxygen Flow for the Passenger Oxygen System (except for the lavatory oxygen system, addressed in the FCAR SM-10) (RBAC/14 CFR 25.1443 (c))” – FCAR SM-12;
- “Flight Control System Failure Criteria (RBAC 25.671 (c)(2) and (c)(3), 25.1309)” – FCAR SM-14;
- “Combined Aircraft Pressurization Outflow and Positive Pressure Differential Relief Valves (RBAC/14 CFR 25.841 (b)(1))” – FCAR SM-18;

Exemptions:

- “RBAC 25.809(a) Overwing Outside View Means (RBAC/14 CFR 25.809(a))” – FCAR EI-01, granted through Decisão nr. 81 dated on 31st May 2017;
CERTIFICATION BASIS (cont’d)

Applicable for ERJ 190-300 Model (cont’d):

RBAC 26 – Continued Airworthiness and Safety Improvements for Transport Category Airplanes: Compliance has been found for the following regulations at amendment 26-1: section 26.45.

Fuel Venting and Exhaust Emission Requirements:

RBHA 34 (Fuel Venting and Exhaust Emission Requirements for Turbine Engine Powered Airplanes - Type Certification), corresponding to 14 CFR Part 34 and including the amendment effective on the date the ERJ-190 certification by ANAC.

Noise Standards for ERJ 190-300 Model with PW1900G:

RBAC 36 (Noise Standard), corresponding to 14 CFR Part 36 incorporating Amendments 36-1 through 36-28

Optional Design Requirements:

- RBHA/14 CFR 25.1403 – Wing Icing Detection Lights;
- RBHA/14 CFR 25.1411 and 25.1415 – Safety Equipment Required for Ditching Certification;
- RBHA/14 CFR 25.1419 – Ice Protection; and
- RBHA/14 CFR 25.1421 – Megaphones

Optional Design Requirements Non Compliant:

- RBHA/14 CFR 25.801 – Ditching; and
- RBHA/14 CFR 25.3 – Special provisions for ETOPS type design approvals.

Application Date for Type Certification:

- ERJ 190-100 STD: 30 May 2001;
- ERJ 190-100 LR: 30 May 2001;
- ERJ 190-100 IGW: 30 May 2001;
- ERJ 190-100 ECJ: 16 November 2006;
- ERJ 190-100 SR: 22 September 2009;
- ERJ 190-200 STD: 31 December 2001;
- ERJ 190-200 LR: 31 December 2001;
- ERJ 190-200 IGW: 31 December 2001; and
- ERJ 190-300: 29 July 2013.

PRODUCTION BASIS

Production approved under COP E-7203-01, dated 11 December 2008.

REQUIRED EQUIPMENT

The basic required equipment as prescribed in the applicable airworthiness regulations (see certification basis) must be installed in the airplane. The approved equipment is listed in the Embraer Technical Report “190-100TDS001” and “190-200TDS001”. For the ERJ 190-100 ECJ, it is listed in the Embraer Technical Report 190-100TDS001. The ANAC approved airplane flight manual P/N AFM-1868, for the ERJ 190-100 and ERJ 190-200 models, or P/N AFM-5691, for the ERJ 190-300 model, must be on board.

NOTES:

NOTE 1

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

The certificated basic empty weight and corresponding center of gravity location must include the total engine oil, hydraulic fluid and unusable fuel.
NOTE 2

Markings and placards: all markings and placards required by the applicable certification requirements (see certification basis) and by the operational requirements must be installed in the appropriate locations.

NOTE 3

Continuing Airworthiness

Each operator must incorporate into their ANAC-approved maintenance program the applicable items from the applicable ANAC-approved Airworthiness Limitations Section.

For all ERJ 190-100 and ERJ 190-200 models, except for ERJ 190-100 ECJ, the Airworthiness Limitations Section is found in Appendix A (Part 1, 2, 3 and 4) of the document MRB Report P/N 1928, Revision 1 or subsequent ANAC approved revision.

For the ERJ 190-100 ECJ model, the Airworthiness Limitations Section is found in Appendix A (Part 1, 2, 3 and 4) of the document Maintenance Planning Guide (MPG) P/N 2928, Revision 0 or subsequent ANAC approved revision.

For the ERJ 190-300 model, the Airworthiness Limitations Section is found in Appendix A (Part 1, 2, 3, 4 and 5) of the document MRB Report P/N 5881, revision 0 or subsequent ANAC approved revision.

The Structures Repair Manual P/N 1929 is applicable to all ERJ 190-100 and ERJ 190-200, except for the ERJ 190-100 ECJ model, and it is approved and controlled by ANAC. The Structures Repair Manual P/N 2773 is applicable to model ERJ 190-100 ECJ.

The Structures Repair Manual P/N 6736 is applicable to the ERJ 190-300 model and it is approved and controlled by ANAC.

For the ERJ 190-300 model, the instructions for continued airworthiness are incomplete. RBAC 21.50(b) requires the holder of this type certificate to ensure these instructions are complete and furnished prior to when the standard airworthiness certificate is issued or the aircraft is delivered, whichever occurs later. The standard airworthiness certificate of the aircraft must not be issued until the ICA(s) are complete and considered acceptable.

NOTE 4

The ERJ 190-100 ECJ is approved for 0 (zero) passenger if no interior is installed or up to 19 (nineteen) passengers if interior is approved through STC/CST or equivalent modification factory incorporated.

The ERJ 190-100 ECJ model is configured to “private, not for hire or common carriage use” unless Service Bulletin SB-190LIN-00-005 Modification of Pocket Doors to Support Commercial Charter Operation is installed.

NOTE 5

Systems containing user modifiable data: the systems containing user modifiable data are:

- User Partition of the Owner Requirements Table (ORT) of the SATCOM (Satellite Communication System);
- Airline Modifiable Information (AMI) of the Communication Management Function (CMF);
- System Setting Data - Airline Operational Data (APM) of the Configuration Monitor System - Host Configuration Monitor (NIC); and
- User Application of the Aircraft Condition Monitoring Function (ACMF).

User modifiable data are not approved by ANAC as part of the airplane type design.

NOTE 6

The ERJ 190-100 and ERJ 190-200 models are often referred to in Embraer marketing literature as “EMBRAER 190” and “EMBRAER 195”, respectively.

The ERJ 190-100 IGW and ERJ 190-200 IGW models are often referred to in Embraer marketing literature as “EMBRAER 190 AR” and “EMBRAER 195 AR”, respectively.

The ERJ 190-100 ECJ model is often referred to in Embraer marketing literature as “Lineage 1000”.

The ERJ 190-300 model is often referred to in Embraer marketing literature as “EMBRAER 190E2”.

These names are strictly marketing designations and are not part of the official models designation.
NOTE 7

ERJ 190-100 and ERJ 190-200 Models:

Type design definition: the type design which was submitted for ANAC evaluation and which is considered ANAC approved is defined by the following Embraer documents:

- 190-100TDSD_ECJ “Type Design Standard Document”, revision B, or later acceptable revisions;
- 190EBD001 “Engineering Basic Data”, revision L, dated 10 August 2009, or later acceptable revisions;
- Annex I to ANAC FCAR HT-03 (List of all OTP/TSO/TSO/etc. articles installed in the ERJ 190-100 ( ) aircraft), dated 29 June 2005, or later acceptable revision;
- Aircraft Interior Configuration Report, issued for each ERJ 190-100 ( ) serial number airplane;
- 190-200TDSD “Type Design Standard Document”, revision /2, dated 26 August 2005, or later acceptable revision;
- 190EBD200 “Engineering Basic Data”, revision G, dated 1 July 2005, or later acceptable revision;
- Annex I to ANAC FCAR HT-03 (List of all OTP/TSO/TSO/etc. articles installed in the ERJ 190-100 ( ) aircraft), dated 29 June 2005, or later acceptable revision; and
- Aircraft Interior Configuration Report, issued for each ERJ 190-200 ( ) serial number airplane.

ERJ 190-300 Model:

- 190TDD300 “Type Design Standard Document ERJ 190 – Model 190-300”, revision “/”, dated 18 January 2018, or later acceptable revisions;
- 190EBD001 “ERJ 190-300 Engineering Basic Data”, revision “E”, dated 17 January 2018, or later acceptable revisions;
- Annex I to 196MSTSO001 “E-Jets E2 Technical Standard Order – TSO List” (“190E2 – Technical Standard Order List”), revision “A”, dated 07 December 2017, or later acceptable revision; and
- “Aircraft Interior Configuration 3D Drawing”, 196-76000-901__AIC_29-11-17.dxml, issued for each interior configuration of the ERJ 190-300.

NOTE 8

Engine Control Plugs part numbers ECP 2041M42P02, 2041M42P06, 2041M42P08 and 2041M42P09 are not permitted on any ERJ 190-100 and ERJ 190-200 CF34-10E engines configuration.

NOTE 9

The CF34-10E5, CF34-10E5A1, CF34-10E6, CF3410E6 A1, CF34-10E7, and CF34-10E7-B engines designation, as presented in the Engine Parts List, must contain the suffix Gxx, which defines the specific engine configuration. For the ERJ 190-100 and ERJ 190-200 models, the following designations are approved for operation: CF34-10E6G03, CF34-10E6A1G03, CF34-10E5G03, CF34-10E5A1G03, CF34-10E6G05, CF34-10E6A1G05, CF34-10E5G05, CF34-10E5A1G05, CF34-10E7G03, CF34-10E7G05, CF34-10E5G07, CF34-10E5A1G07, CF34-10E6G07, CF34-10E6A1G07, CF34-10E7G07, and CF34-10E7-BG07

The engine nameplate may display the model (example: CF34-10E6) and the Gxx suffix (example: G05) in separate fields.

NOTE 10

Emergency Exit Locator Sign ELOS (FCAR HES-36) is not applicable for ERJ 190-100 ECJ model.

NOTE 11

For ERJ 190-100 IGW model, post-Mod Service Bulletin 190-00-0008, Maximum Takeoff Weight will be 46 000 kg, and post-Mod Service Bulletin 190-00-0009, Maximum Takeoff Weight will be 51 800 kg.

NOTE 12

The ERJ 190-100 STD, -100 LR, -100 IGW, -100 SR, and -100 ECJ models type design reliability and performance are approved according to RBHA/14 CFR Part 25 Appendix K and are considered adequate for Extended Range Operations (ETOPS) up to 120 minutes when operated and maintained as per CMP-2356 - ERJ 190 Configuration, Maintenance and Procedures (CMP) document for the ERJ 190-100 STD, -100 LR and -100 IGW models or CMP-2852 - ERJ 190 Configuration, Maintenance and Procedures (CMP) document for the ERJ 190-100 ECJ model.
NOTE 13

Performance data for landing on grooved or porous friction course (PFC) runway has been approved for ERJ 190-100 and ERJ 190-200 models according to Design Change Approval (DCA) 0190-000-00136-2008/ANAC. The operators that wish to use this approved data must obtain operational approval from their local authority, and additionally the operators should coordinate with the airport authority in order that appropriate standards are followed. The AFM, as required by RBHA/14 CFR Part 25.1587, should unmistakably present the conditions under which such performance data may be used.

NOTE 14

The ERJ 190-100 IGW serial numbers 19000214 and 19000277, referred in Embraer marketing literature as "EMBRAER 190 PR", configured as delivered to the Brazilian Air Force, must be operated in accordance with the Approved Flight Manual Document No. 1868 and maintained in accordance with MPG-3175 and CMP-2356. For operation under civilian rules, the compliance with 25.785(h)(2) and RBAC 26 requirements must be demonstrated.

NOTE 15

Revoked.

NOTE 16

In order to comply with Operational Requirements RBHA 121.312(e)(3), the ERJ 190-100 STD, -100 LR, -100 IGW, -200 STD, -200 LR, and -200 IGW aircraft models that embodied modification according to DCA 190-025-00147-2008/ANAC meet the flammability certification requirement RBHA/14 CFR Part 25.856 (b) "Thermal/Acoustic Insulation for Burnthrough Protection".

NOTE 17

The type certificate holder has changed its commercial name. All the ANAC documentation issued to the previous name up to this date remains valid. All documentation issued previously bearing the previous name continues valid.

NOTE 18

For the ERJ 190-300 model, the RVSM operation is limited to 50 aircraft from the P/N 19020009.

Original in the Portuguese language signed by

MÁRIO IGAWA
General Manager, Aeronautical Product Certification