



AGÊNCIA NACIONAL DE AVIAÇÃO CIVIL - BRASIL

**TYPE CERTIFICATE DATA SHEET Nº EA-2007T10**

Type Certificate Holder:  
Cessna Aircraft Company  
P.O. Box 7704  
Wichita, Kansas 67277  
**USA**

EA-2007T10 Sheet 01
<b>CESSNA</b>
510
October 2007

This data sheet, which is part of Type Certificate No. 2007T10, prescribes conditions and limitations under which the product, for which the Type Certificate was issued, meets the airworthiness requirements of the Brazilian Aeronautical Regulations.

**I - Model 510 Mustang (Normal Category), approved 29 October 2007.**

**ENGINE** Two Pratt & Whitney Canada PW615F-A turboprops

**FUEL** Specification ASTM-D1655, type Jet A, Jet A-1  
Specification MIL-T-83133, type JP-8

**ENGINE LIMITS** Limits Static thrust standard day, sea level

Takeoff 662.4 kg (1 460 lb)

Max. permissible engine rotor operating speeds (Takeoff and Maximum Continuous):

N1(fan) 100% (100% = 21 830 rpm)

N2 (Gas Gen.) 100% (100% = 44 040 rpm)

Max. permissible interturbine gas temperatures:

Takeoff 830 °C

Max. continuous 830 °C

Transient (starting 5 sec.) 862 °C

Transient (operation 20 sec) 862 °C

<b>AIRSPEED LIMITS (IAS)</b>	km/h (knots)	Mach
Maximum operating ( $V_{MO}$ ): Sea level to 27.120 ft.	463 (250)	-
Maximum operating ( $M_{mo}$ ) above 27.120 ft.	-	0.63
Maneuvering ( $V_A$ ) - sea level:	314.8 (170)	-
Flaps extended ( $V_{FE}$ )		
30° (landing):	277.8 (150)	-
15° (takeoff and approach):	342.6 (185)	-
Minimum control speed - Air ( $V_{MCA}$ ):		
0° (takeoff):	47.3 (92)	
15° (takeoff and approach):	41.7 (81)	

**AIRSPPEED LIMITS (IAS)  
(Cont.)**

Minimum control speed - Ground ( $V_{MCG}$ ):	37.6 (73)	
L. G. operation - extend ( $V_{LO}$ ):	463 (250)	-
L. G. operation - retract ( $V_{LO}$ ):	342.6 (185)	-
L. G. extended ( $V_{LE}$ ):	463 (250)	-
Maximum autopilot operating speed	463 (250)	0.63

**CG RANGE**

Forward Limits: Linear variation from 7.3 m (287.04 in) aft of datum (21.32% MAC) at 3 959.9 kg (8 730 lb) to 7.2 m (285.59 in) aft of datum (19.00 % MAC) at 3 142 kg (6 927 lb); 7.3m (285.59 in) aft of datum (19.00 % MAC) at 3 142 kg (6 927 lb) or less.

Aft Limits: 7.43 m (292.46 in) aft of datum (30% MAC) at 3 258.4 kg (8 730 lb) or less

Landing Gear retracting moment (-13 02.87) in-lb.

**DATUM**

3.6 m (143.7 in) forward of the jig point (nose jack pad location).

**LEVELING MEANS**

Longitudinal – In board crew seat rails at FS 196.00.  
Lateral - In board crew seat rails at FS 196.00.

**MEAN AERODYNAMIC CHORD**

1.6 m (62.51 in.) (L.E. of MAC at + 7 m (273.71 in.) aft of datum)

**MAXIMUM WEIGHT**

Takeoff: 3 921.3 kg (8 645 lb)  
Landing: 3 628.7 kg (8 000 lb)  
Zero Fuel: 3 061.7 kg (6 750 lb)  
Ramp: 3 959.9 kg (8 730 lb)

**MINIMUM CREW**

for all Flights (See NOTE 6 for cockpit equipment/arrangement restrictions):

One pilot (in the left pilot seat) plus additional equipment as specified in the Kinds of Operations Equipment List (KOEL) contained in the Limitations Section of the Brazilian Airplane Flight Manual (FAA) approved by FAA on behalf of the ANAC, OR  
One pilot and one copilot.

**MAXIMUM PASSENGERS**

Maximum six (two crew plus four passenger seats)

**MAXIMUM BAGGAGE**

Nose compartment 145.1 kg (320 lb) (+3.1 m (120.10 in) aft of datum)  
Tailcone total 136.1 kg (300 lb) (+ 9.1 m (356.33 in) aft of datum)

**FUEL CAPACITY**

Total usable fuel 1 164 kg (2 568 lb.) Two wing tanks with 582.4 kg (1 284 lb) usable each; (see NOTE 1 for unusable) + 7.4 m (292.09 in) aft of datum

**OIL CAPACITY**

Tank mounted on each engine: 5.12 quarts (4.85 liters) total each engine; + 9.2 m (363.11 in.) aft of datum; (see NOTE 1)

**HYDRAULIC FLUID CAPACITY**

4.6 kg (10.23 lb.) at + 4.9 m (192.45 in.)

**MAXIMUM OPERATING ALTITUDE**

12 496.8 m (41 000 ft)

*after*

<b>TEMPERATURE OPERATING LIMITS</b>	Maximum: 50 °C Minimum: -71 °C																																							
<b>CONTROL SURFACE MOVEMENTS</b>	<table border="0"> <tr> <td>Elevator:</td> <td>Up 25° +0°, -1°</td> <td>Down 15° +1°, -1°</td> </tr> <tr> <td>Elevator trim tab:</td> <td>Up 4.5° +1°, -1°</td> <td>Down 20° +1°, -1°</td> </tr> <tr> <td>Rudder:</td> <td>Right 35° +1°, -1°</td> <td>Left 35° +1°, -1°</td> </tr> <tr> <td>Rudder trim tab:</td> <td>Right 20° +2°, -1°</td> <td>Left 20° +2°, -1°</td> </tr> <tr> <td>Aileron:</td> <td colspan="2">Neutral Pos (TE up) 2° +0.5°, -0.5°</td> </tr> <tr> <td></td> <td>Up (from neutral)</td> <td>23° +1°, -1°</td> </tr> <tr> <td></td> <td>Down (from neutral)</td> <td>18° +1°, -1°</td> </tr> <tr> <td>Aileron trim tab:</td> <td>Up 21° +2°, -1°</td> <td>Down 21° +2°, -1°</td> </tr> <tr> <td>Wing flaps:</td> <td colspan="2">Up 0° (Utilizing the Flap Streamline Fixture per AMM)</td> </tr> <tr> <td></td> <td>TO/APP</td> <td>15° +1°, -1°</td> </tr> <tr> <td></td> <td>Land</td> <td>35° +1°, -1°</td> </tr> <tr> <td>Speed break:</td> <td colspan="2">Upper 0 to 59.5° +1°, -1°</td> </tr> <tr> <td></td> <td colspan="2">Lower 0 to 62.5° +1°, -1°</td> </tr> </table>	Elevator:	Up 25° +0°, -1°	Down 15° +1°, -1°	Elevator trim tab:	Up 4.5° +1°, -1°	Down 20° +1°, -1°	Rudder:	Right 35° +1°, -1°	Left 35° +1°, -1°	Rudder trim tab:	Right 20° +2°, -1°	Left 20° +2°, -1°	Aileron:	Neutral Pos (TE up) 2° +0.5°, -0.5°			Up (from neutral)	23° +1°, -1°		Down (from neutral)	18° +1°, -1°	Aileron trim tab:	Up 21° +2°, -1°	Down 21° +2°, -1°	Wing flaps:	Up 0° (Utilizing the Flap Streamline Fixture per AMM)			TO/APP	15° +1°, -1°		Land	35° +1°, -1°	Speed break:	Upper 0 to 59.5° +1°, -1°			Lower 0 to 62.5° +1°, -1°	
Elevator:	Up 25° +0°, -1°	Down 15° +1°, -1°																																						
Elevator trim tab:	Up 4.5° +1°, -1°	Down 20° +1°, -1°																																						
Rudder:	Right 35° +1°, -1°	Left 35° +1°, -1°																																						
Rudder trim tab:	Right 20° +2°, -1°	Left 20° +2°, -1°																																						
Aileron:	Neutral Pos (TE up) 2° +0.5°, -0.5°																																							
	Up (from neutral)	23° +1°, -1°																																						
	Down (from neutral)	18° +1°, -1°																																						
Aileron trim tab:	Up 21° +2°, -1°	Down 21° +2°, -1°																																						
Wing flaps:	Up 0° (Utilizing the Flap Streamline Fixture per AMM)																																							
	TO/APP	15° +1°, -1°																																						
	Land	35° +1°, -1°																																						
Speed break:	Upper 0 to 59.5° +1°, -1°																																							
	Lower 0 to 62.5° +1°, -1°																																							
<b>SERIAL NUMBER ELIGIBLE</b>	510-0001 and up A Certificate of Airworthiness for Export endorsed as noted under "Import Requirements" must be submitted for each individual aircraft for which application for a Brazilian Certificate of Airworthiness is made.																																							
<b>IMPORT ELIGIBILITY</b>	<p>A Brazilian Certificate of Airworthiness may be issued on the basis of on an FAA Export Certificate on Airworthiness (or a third country Export Certificate on Airworthiness, in case of used aircraft imported from such country), including the following statement:</p> <p style="padding-left: 40px;">"The aircraft covered by this certificate has been inspected, tested and found to be in conformity with the Brazilian approved type design as defined by the Brazilian Type Certificate No. 2007T10 and in condition of safe operation".</p> <p>The ANAC Report H.10-2260-00, dated 29 October 2007 or further revisions, contains the Brazilian requirements for the acceptance of these airplanes. (See NOTE 4)</p>																																							
<b>CERTIFICATION BASIS</b>	<p>Brazilian Type Certificate No. 2007T10 issued on 29 October 2007 based on the RBHA 23, which endorses the FAR 23, effective 1 February 1965, as amended by 23-1 through 23-54.</p> <p><u>Special Conditions:</u></p> <p>FAA Special Conditions as follows:</p> <p>(a) 23-193-SC, Turbofan Engines and Engine Location (FAA Issue Paper P-1).</p> <p>(b) 23-158-SC, Protection of Systems for High Intensity Radiated Fields (HIRF) (Issue Paper SE-1).</p> <p>(c) 23-181-SC, Flight Performance, Flight Characteristics, and Operating Limitations (FAA Issue Paper F-1).</p> <p>(d) 23-192-SC, Full Authority Digital Engine Control (FADEC) System (FAA Issue Paper P-5).</p> <p><u>Additional ANAC special conditions:</u></p> <p>- Static Pressure System (FCAR SE-04).</p> <p>- Oxygen equipment and supply (FCAR SM-01).</p>																																							

Equivalent levels of safety findings:

FAA Equivalent levels of safety:

(a) ACE-05-8: RBHA/FAR 23.1305(c)(5) and (c)(2), and RBHA/FAR 23.1549, digital indication of N2 and FF (FAA Issue Paper P-2).

(b) ACE-05-9: RBHA/FAR 23.1555(d)(1), usable fuel quantity marking on the Cessna Model 510 (FAA Issue Paper P-3).

(c) ACE-05-10: RBHA/FAR 23.807(e), Emergency Exit Water Barrier on the Cessna 510 Mustang (FAA Issue Paper A-1).

(d) ACE-05-11: RBHA/FAR 23.841(b)(6), Cabin Pressurization for High Altitude takeoff and Landing Operations (FAA Issue Paper ME-1).

(e) ACE-05-12: RBHA/FAR 23.1435(a)(2), Hydraulic Pressure Indication (FAA Issue Paper ME-2).

(f) ACE-05-23: RBHA/FAR 23.1447(e), Passenger Oxygen Dispensing Units for Cessna Model 510 (FAA Issue Paper ME-05).

(g) ACE-05-28: RBHA/FAR 23.841(a), Cabin Pressurization (FAA Issue Paper ME-6).

(h) ACE-06-03: RBHA/FAR 23.1545(b)(4), Airspeed indicator (FAA Memorandum dated 11 August 2006).

Additional ANAC Equivalent levels of safety:

- Emergency Exit Locator Signs (FCAR EI-01).

- On Board Database (FCAR SW-13).

Noise requirements:

RBHA 36, corresponding to FAR 36 effective 01 December 1969, as amended by Amendments 36-1 through 36-26

Emission requirements:

RBHA 34, corresponding to FAR 34 effective 10 September 1990, as amended by Amendments 34-1 through 34-3;

Compliance with RBHA/FAR 23.1141(e) is in accordance with FAA ACE-05-24, Guidance on compliance with 23.1141(e) for the Cessna Model 510 aircraft (FAA Issue Paper P-4).

**REQUIRED EQUIPMENT**

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

**DATA PERTINENT TO ALL MODELS:****NOTES:****NOTE 1** Weight and balance.

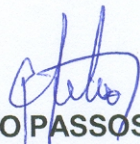
Current weight and balance information, including list of equipment included in certificated empty weight, and loading instructions are provided for each airplane in the FAA Approved Airplane Flight Manual (AFM) at the time of original certification.

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

Unusable fuel	24.2 kg (53.40 lb) at + 7.4 m (290.56 in)
Full oil	9.2 kg (20.20 lb) at + 9.2 m (363.11 in)
Hydraulic Fluid	4.6 kg (10.23 lb) at + 4.9 m (192.45 in)

*afp*

- 
- NOTE 2**     Markings and placards.  
Airplanes must be operated according to the Brazilian Airplane Flight Manual (AFM) approved by FAA on behalf of the ANAC, part number 510FM-02. Required placards and markings are listed in Chapter Eleven (11) of Maintenance Manual, part number 510MM00.
- NOTE 3**     Continuing Airworthiness.  
See Maintenance Manual, Chapter Four (4), "Airworthiness Limitations" for inspections, mandatory retirement life information, and other requirements for continued airworthiness.
- NOTE 4**     The differences of the Brazilian airplanes in relation to the basic FAA type design are summarized below:  
1. The Brazilian Airplane Flight Manual.  
2. Markings and placards.
- NOTE 5**     All replacements seats (crew and passenger), although they may comply with TSO C127, must also be demonstrated to comply with installation requirements into the aircraft listed in RBHA/FAR 23.2, 23.561, 23.562, and 23.785.  
  
The foam cushion buildup of all seats (crew and passenger) may not be altered. Any deviations in the foam construction or stiffness must be demonstrated by test to comply with the RBHA/FAR 23.562 paragraph.
- NOTE 6**     Approval for operation with a minimum crew of one pilot is based upon the cockpit equipment installation and arrangement evaluated during ANAC certification test. No significant changes may be made to the installed cockpit equipment or arrangement (EFIS, autopilot, avionics, etc.), except as permitted by the approved MMEL, without prior approval from the responsible FAA/Aircraft Certification Office. The one pilot operation has also to be approved by ANAC/SSO.
- NOTA 7**     S/N 510-001 and On: All airplanes are equipped with Garmin G1000 dual RVSM capable Air Data Computers and pilot's and copilot's Primary Flight Displays as standard equipment.  
  
Each operator must obtain RVSM operating approval directly from the ANAC-SSO.
- NOTA 8**     The model 510 is approved for One Engine Inoperative 10 minutes thrust capability with the Pratt & Whitney Canada PW615F-A turbofan engine, per FAA Policy Memo "Project Specific Policy on Approval for 10-Minute Rated Takeoff Thrust during Takeoff with One Engine Inoperative (OEI) under RBHA/FAR 23 and RBHA/FAR 33 for Cessna Model 510 Airplane with PW615F-A Engines", dated August 15, 2006, from Standards Office, Small Airplane Directorate and Standards Office, Engine and Propeller Directorate.
- NOTA 9**     The System Safety Assessment process has identified mandatory maintenance actions, which must be performed at specific intervals to compensate for latent failures. A list of those actions is contained in Report RL-510-176, and cannot be changed without participation from the certificating FAA/ACO. This document has influenced certain maintenance actions documented in Airworthiness Limitations section (Chapter 4) of the maintenance manual approved by FAA.

  
for **CLÁUDIO PASSOS SIMÃO**  
Gerente Geral, Certificação de Produtos Aeronáuticos  
(Manager, Aeronautical Products Certification)

---