

**DEPARTMENT OF TRANSPORTATION
FEDERAL AVIATION ADMINISTRATION**

| |
|---|
| A00014WI Revision 1 Cessna 510 September 19, 2006 |
|---|

This data sheet which is part of Type Certificate No. A00014WI prescribes conditions and limitations under which the product for which the type certificate was issued meets the airworthiness requirements of Title 14 of the Code of Federal Regulations.

| | |
|-------------------------|---|
| Type Certificate Holder | Cessna Aircraft Company P.O. Box 7704 Wichita, Kansas 67277 |
|-------------------------|---|

I. Model 510, (Normal Category), Approved September 8, 2006

Engines

Two Pratt & Whitney Canada PW615F-A turboprops
Engine TC #E00073EN — Certified September 8, 2006

Fuel Jet A, Jet A-1, JP-8

Engine Limits Static thrust standard day, sea level

| | |
|---------|-----------|
| Takeoff | 1,460 lb. |
|---------|-----------|

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

| | |
|---------------------------|--------------------------|
| N ₁ (fan) | 100% (100% = 21,830 rpm) |
| N ₂ (Gas Gen.) | 100% (100% = 44,040 rpm) |

Max. permissible interturbine gas temperatures:

| | |
|------------------------------|---------------|
| Takeoff | 830 Degrees C |
| Max. continuous | 830 Degrees C |
| Transient (starting 5 sec.) | 862 Degrees C |
| Transient (operation 20 sec) | 862 Degrees C |

Airspeed limitations

| | |
|-------------------------------------|-----------|
| V _{MO} (maximum operating) | |
| Sea level to 27,120 ft. | 250 KIAS |
| M _{MO} above 27,120 ft. | 0.63 Mach |

| | |
|---|----------|
| V _{FE} (maximum flap extended) | |
| 15 degrees (takeoff & approach) | 185 KIAS |
| 30 degrees (landing) | 150 KIAS |

| | |
|---|---------|
| V _{MCA} (minimum control airspeed) Air | |
| 0 degrees (takeoff) | 92 KIAS |
| 15 degrees (takeoff & approach) | 81 KIAS |

| | |
|---|---------|
| V _{MCG} (minimum control speed) Ground | 73 KIAS |
|---|---------|

| | | | | | |
|----------|---|---|---|---|---|
| Page No. | 1 | 2 | 3 | 4 | 5 |
| Rev. No. | 1 | 1 | 1 | 1 | 1 |

| | |
|--|---------------------------------|
| V _{LO} (landing gear operating) | |
| Extend | 250 KIAS |
| Retract | 185 KIAS |
| V _{LE} (landing gear extended) | 250 KIAS |
| V _{SB} (speedbrake extended) | Any speed with or without flaps |
| Maximum autopilot operating speed | 250 KIAS or 0.63 Mach |
| Maximum tire ground speed | 160 knots |

C.G. Range Design C.G. Limits:

Forward Limits: Linear variation from 287.04 in. aft of datum (21.32% MAC) at 8730 lb. to 285.59 in. aft of datum (19.00 % MAC) at 6927 lb.; 285.59 in. aft of datum (19.00 % MAC) at 6927 lb. or less.

Aft Limits: 292.46 in. aft of datum (30% MAC) at 8730 lb. or less

Landing Gear retracting moment (-1302.87) in-lb.

MAC

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

Maximum Weight

| | |
|-----------|-----------|
| Takeoff | 8,645 lb. |
| Landing | 8,000 lb. |
| Zero Fuel | 6,750 lb. |
| Ramp | 8,730 lb. |

Minimum Crew for all Flights (See note 5 for cockpit equipment/arrangement restrictions):

One pilot (in the left pilot seat) plus additional equipment as specified in the Kinds of Operations Equipment List (KOEL) contained in the Limitations Section of the FAA Approved Airplane Flight Manual

OR

One pilot and one copilot

No. of Seats

Maximum six (two crew plus four passenger seats)

Maximum Baggage

| | |
|------------------|------------------------------------|
| Nose compartment | 320 lb. (+120.10 in. aft of datum) |
| Tailcone total | 300 lb. (+356.33 in. aft of datum) |

Fuel Capacity (usable)

Total usable fuel 2,568 lbs. Two wing tanks with 1284 lbs. usable each; (see NOTE 1 for unusable) +292.09 in. aft of datum

Oil Capacity (total)

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

Maximum Operating Altitude

41,000 ft.

Control Surface Movements

| | | |
|-------------------|---------------------|--|
| Elevator | Up | 25 +0/-1 degrees |
| | Down | 15 +1/-1 degrees |
| Elevator Trim Tab | Up | 4.5 +1/-1 degrees |
| | Down | 20 +1/-1 degrees |
| Rudder | Right | 35 +1/-1 degrees |
| | Left | 35 +1/-1 degrees |
| Rudder Trim Tab | Right | 20 +2/-1 degrees |
| | Left | 20 +2/-1 degrees |
| Aileron | Neutral Pos (TE up) | 2 +0.5/-0.5 degrees |
| | Up (from neutral) | 23 +1/-1 degrees |
| | Down (from neutral) | 18.5 +1/-1 degrees |
| Aileron Trim Tab | Up | 21 +2/-1 degrees |
| | Down | 21 +2/-1 degrees |
| Wing Flap | Up | 0 degrees (Utilizing the Flap Streamline Fixture per AMM) |
| | TO/APP | 15 +1/-1 degrees |
| | Land | 30 +1/-1 degrees |
| Speedbrakes | Upper | 0 to 59.5 +1/-1 degrees |
| | Lower | 0 to 62.5 +1/-1 degrees |

See Airplane Maintenance Manual (AMM) for rigging instructions.

Serial Numbers Eligible

510-0001 and up

Datum

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.

Certification Basis - Model 510:

- (1) Part 23 of Title 14 of the Code of Federal Regulations effective February 1, 1965, as amended by Amendments 23-1 through 23-54;
- (2) Part 36 of Title 14 of the Code of Federal Regulations effective December 1, 1969, as amended by Amendments 36-1 through 36-26
- (3) Part 34 of Title 14 of the Code of Federal Regulations effective September 10, 1990, as amended by Amendments 34-1 through 34-3;
- (4) Compliance with the Noise Control Act of 1972;

- (5) Special Conditions as follows:
- (a) 23-193-SC, Turbofan Engines and Engine Location
 - (b) 23-158-SC, Protection of Systems for High Intensity Radiated Fields (HIRF)
 - (c) 23-181-SC, Flight Performance, Flight Characteristics, and Operating Limitations; items 1 through 24
 - (d) 23-192-SC, Full Authority Digital Engine Control (FADEC) System
- (6) Equivalent level of safety as follows:
- (a) ACE-05-8: 14 CFR § 23.1305(c)(5) and (c)(2), and § 23.1549, digital indication of N2 and FF.
 - (b) ACE-05-9: 14 CFR § 23.1555(d)(1), usable fuel quantity marking on the Cessna Model 510.
 - (c) ACE-05-10: 14 CFR § 23.807(e), Emergency Exit Water Barrier on the Cessna 510 Mustang
 - (d) ACE-05-11: 14 CFR § 23.841(b)(6), Cabin Pressurization for High Altitude takeoff and Landing Operations
 - (e) ACE-05-12: 14 CFR § 23.1435(a)(2), Hydraulic Pressure Indication
 - (f) ACE-05-23: 14 CFR § 23.1447(e), Passenger Oxygen Dispensing Units for Cessna Model 510
 - (g) ACE-05-28: 14 CFR § 23.841(a), Cabin Pressurization
 - (h) ACE-06-03: 14 CFR § 23.1545(b)(4), Airspeed indicator
- (7) The interaction of the wing de-ice function and engine installation has been satisfactorily demonstrated. Changes to the wing deice system which affect ice shedding characteristics, or changes to engine ingestion requirements, should be evaluated with respect to this interaction and coordinated with the Wichita Aircraft Certification Office.
- (8) Compliance with 14 CFR 23.1141(e) is in accordance with ACE-05-24, Guidance on compliance with 14 CFR 23.1141(e) for the Cessna Model 510 aircraft (Project # TC3801WI-A). Changes affecting 14 CFR 23.1141(e), should be coordinated with the Wichita Aircraft Certification Office.

Application for type certificate dated December 31, 2003. Type Certificate A00014WI issued September 8, 2006, obtained by the manufacturer using Delegation Option Authorization Procedures of Part 21 of Title 14 of the Code of Federal Regulations. The Model 510 is defined by Cessna Airplane Assembly Drawing Number 7000000-1.

Production Basis – Model 510:

None. Before original airworthiness certification of each aircraft, an FAA representative must perform a detailed inspection for workmanship, materials, conformity with the approved technical data, and a check of the flight characteristics. In the event of an application for a standard airworthiness certificate or, if an applicant intends to produce a new aircraft under 14 CFR § 21.183(d), and the applicant is manufacturing, building, or assembling to another person's type certificate, the applicant must provide written evidence of permission from the type certificate holder. Conduct of such activity without written evidence of permission may be a violation of 49 U.S.C. § 44704(a)(3).

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

NOTE 1. 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 | 53.40 lbs at +290.56 in |
| Full oil | 20.2 lb. at +363.11 in. |
| Hydraulic Fluid | 10.23 lb. at +192.45 in. |

NOTE 2. Airplanes must be operated according to the FAA Approved Airplane Flight Manual (AFM), part number 510FM-00. Required placards and markings are listed in Chapter Eleven (11) of Maintenance Manual, part number 510MM00.

NOTE 3. See Maintenance Manual, Chapter Four (4), "Airworthiness Limitations" for inspections, mandatory retirement life information, and other requirements for continued airworthiness.

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

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

NOTE 5. Approval for operation with a minimum crew of one pilot is based upon the cockpit equipment installation and arrangement evaluated during FAA certification testing. No significant changes may be made to the installed cockpit equipment or arrangement (EFIS, autopilot, avionics, etc.), except as permitted by the approved MMEL, without prior approval from the responsible Aircraft Certification Office.

NOTE 6: 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 FAA.

NOTE 7: 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 14 CFR Part 23 and 14 CFR Part 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.

NOTE 8: 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 ACO. This document has influenced certain maintenance actions documented in Airworthiness Limitations section (Chapter 4) of the maintenance manual. Those particular items cannot be changed without participation from the certificating ACO.

END