



# Type Certificate

Number: VA522

Issue Two

Pursuant to regulation 21.013A of the *Civil Aviation Safety Regulations 1998* this type certificate is issued in respect of the following model aircraft:

## Airvan GA10

This certificate is valid until it is suspended or cancelled by the Civil Aviation Safety Authority. The basis of certification is as described in Type Certificate Data Sheet number VA522.

Date of Application:	8 September 2011
Date of Initial Issue:	19 May 2017
issued to:	GippsAero Pty Ltd
in respect of:	Airvan GA10
Date of Issue Two:	19 May 2017
reissued to:	Airvan10 Pty Ltd



David Rees

Delegate of the Authority

*safe skies for all*



No	VA522
Revision	1
Aircraft	Airvan
	GA10
Date	19 May 2017

## TYPE CERTIFICATE DATA SHEET

This data sheet, which is part of Type Certificate No. VA522, lists the conditions and limitations under which the aircraft models for which this Type Certificate was issued meet the airworthiness requirements of the Civil Aviation Safety Authority, Australia.

**Type Certificate Holder**      Airvan10 Pty Ltd  
ACN 609 777 273  
Latrobe Regional Airport  
43 Airfield Rd, Traralgon  
Victoria 3844, Australia  
Postal address:      PO Box 881, Morwell  
Victoria 3840, Australia

**I.    Model GA10**      Approved in the Normal Category 19 May 2017

Engine	Manufacturer	Rolls-Royce Corporation
	TC Number	E10CE (FAA)
	Model	250-B17F/2
	Number of Engines	One (1)

Fuel	Primary	JET A or JET A-1 (ASTM D1655-03 or later)
	Alternate	JET B conforming to ASTM D 6615 or CAN/CGSB-3.22 JP-5 conforming to MIL-DTL-5624 JP-8 conforming to MIL-DTL-83133 Jet Fuel Grade No. 3 conforming to GB 6537 (Peoples Republic of China)

For ambient temperature below +4°C (+40°F) fuels must contain 0.10% up to a maximum of 0.15% anti icing additive (MIL-I-27686 or MIL-DTL-85470) per engine manufacturers instructions. JP-5 and JP-8 fuels contain anti-icing additives. Additional additives must not be used with these fuels.

Engine Limits	Np Maximum Take Off (5 mins)	2030 RPM (450 HP)
	Np Maximum Continuous	2030 RPM (380 HP)
	Np Maximum during transient	2030 to 2233 RPM (15 sec max. above 2132 RPM)
	<p>Except as permitted in the GA10 <i>Airplane Maintenance Manual</i>, power greater than 35 PSI (165 HP) is not permitted with the aircraft stationary.</p> <p>Operation of the engine in the 75-88% speed range (24,967–29,295 RPM N2, 1522–1786 RPM Np) at power levels above 85 HP (20 psi torque) must be without dwell and of a transient nature (less than 60 seconds).</p> <p>See latest approved revision of the GA10 <i>“Pilot's Operating Handbook and Approved Flight Manual”</i> and FAA Engine TC Data Sheet E10CE for additional details and limitations.</p>	
Propeller	Manufacturer	Hartzell
	TC Number	P18NE (FAA)
	Model	HC-D3F-7H/D9511F-11 (three blade, constant speed, feathering, reversing)
Propeller Limits	Diameter	not over 2134 mm (84.0 in) not under 2093 mm (82.4 in) No further reduction permitted.
	Low Pitch	Refer to GA10 <i>Airplane Maintenance Manual</i> .
	High Pitch	$86^{\circ} \pm 0.5^{\circ}$
	Reverse	$-10^{\circ} \pm 0.5^{\circ}$ at pitch radius 762mm (30.0 in)
Airspeed Limits	Maximum operating $V_{MO}$	157 KCAS (156 KIAS)
	Max operating manoeuvre speed $V_O$	98 KCAS (97 KIAS)
	Manoeuvre $V_A$	133 KCAS (132 KIAS)
	Max flaps extended $V_{FE}$	108 KCAS (107 KIAS)
Centre of Gravity (CG) Range	Forward limit varies linearly between:	
	+1651 mm aft of datum at 1361 kg or less	
	+1943 mm aft of datum at 2155 kg	
	Aft limit varies linearly between:	
	+2083 mm aft of datum at 1134 kg	
	+2108 mm aft of datum at 1905 kg	
	+2108 mm aft of datum at 2155 kg	
	Straight-line variation between points.	
	For CG aft of +2075mm, total main wing fuel tank quantity is limited to 350L.	
Empty Weight CG Range	None. See Note 1.	
Datum	Aft face of fuselage firewall at fuselage station 0 (Stated arms are positive aft; and negative forward)	

Levelling Means	Longitudinal Lateral	Marks (blind rivets) on the port fuselage wall. Level across the top surface of the seat attach fittings on the cabin floor.	
Maximum Weights	Taxi and Ramp Take-off Landing	2166 kg 2155 kg 2048 kg	
Minimum Crew	One (1) pilot in the LH crew station.		
Number of Seats	Up to Ten (10) seats, includes pilot(s) and crew.		
	Occupant CG Positions	Arm	
	Row 1 (Pilot row, adjustable)	+ 848 mm to +1047 mm	
	Row 2	+1803 mm	
	Row 3	+2578 mm	
	Row 4	+3353 mm	
	Row 5	+4128 mm	
Maximum Baggage	Baggage Shelf	113 kg	at +4648 mm
Fuel Capacity	Main wing tanks	two (one tank in each wing)	
	Total each tank	290 litres	at +2167 mm
	Usable each tank	286 litres	at +2165 mm
	Unusable each tank	4 litres	at +2280 mm
	Collector tank	9 litres	at +1184 mm
	Collector tank capacity is designated unusable fuel.		
	See Note 1. for data on weight and balance.		
Oil Capacity	System Total	9.8 litres	at -499 mm
	Unusable	1.25 litres	at -320 mm
	Engine external oil tank (located at -320 mm)		
		6.2 litres	maximum
		4.2 litres	minimum
	See Note 1. for data on weight and balance.		
	See Rolls-Royce <i>Operation and Maintenance Manual</i> (Ref CSP21008 at latest issue) for approved types of oil.		
Maximum Operating Altitude	20,000 ft with an approved oxygen system installed. Refer to local NAA regulations for altitude limit without oxygen.		
Control Surface Movements	Aileron trailing edge	Up Down	17.0° ± 0.5° 16.0° ± 0.5°
	Aileron surface movement measured between the under-surface of the aileron and the rear under-surface of the wing main plane		

Elevator trailing edge	Up	17.5° ± 0.5°
	Down	19.0° ± 0.5°
Elevator control surface movement measured between the chord line of the elevator and the chord line of the horizontal stabiliser with the horizontal stabiliser in the full leading edge down position.		
Rudder trailing edge	L & R	21.0° ± 0.5°
Horizontal Stabiliser leading edge	Up	3.0° ± 0.5°
	Down	5.0° ± 0.5°
Horizontal Stabiliser movement measured between the chord line of the Horizontal Stabiliser and the airplane horizontal reference.		
Wing flaps	Retracted	0° ± 1°
	Take-off	14.0° ± 1°
	Landing	38.0° ± 1°
All measurements refer to hinge line rotations.		
Other Operational Restrictions	Maximum Operating OAT	+50°C
	Minimum Operating OAT	-26°C
Flight in cloud or visible moisture is prohibited when OAT is -18°C or below.		
See Note 4 and the GA10 <i>"Pilot's Operating Handbook and Approved Flight Manual"</i> for temperature related performance limits.		
Serial Numbers Eligible	GA10-TP450-16-101 and subsequent.	
Type Design Data	For Model GA10 aircraft serial number GA10-TP450-16-101 and subsequent: <ul style="list-style-type: none"> <li>(i) Engineering Release GA10-970001, Issue 1, and</li> <li>(ii) GA10 Master Drawing GA10-010001, Issue 1, and</li> <li>(ii) <i>Pilot's Operating Handbook and Approved Flight Manual</i>, D01-01-01, dated 31 March 2017, and</li> <li>(iii) <i>Airplane Maintenance Manual</i> D01-00-01, Chapter 4 <i>Airworthiness Limitations</i>, dated 7 April 2017.</li> </ul>	
Certification Basis	<ol style="list-style-type: none"> <li>1. Subpart 21.B of the Civil Aviation Safety Regulations 1998, including amendments up to SLI 2011 No. 265 (1 April 2012), and</li> <li>2. 14 CFR Part 23, effective December 18, 1964, with amendments 1 through amendment 62 <i>"Airworthiness Standards for Normal Category Airplanes"</i>, excluding the following paragraphs: <ul style="list-style-type: none"> <li>§23.63, §23.67, §23.73, §23.77, §23.221, §23.1545, §23.1583, and,</li> </ul> </li> <li>3. CASA Special Condition SC23.001, which provides substitute paragraphs for the paragraphs excluded from 14 CFR Part 23, amendment 62. See Appendix A.</li> <li>4. No findings of Equivalent Level of Safety have been made.</li> <li>5. No Exemptions have been granted against the Certification Basis.</li> </ol>	

Types of Operation	<ol style="list-style-type: none"> <li>1. Day-Night, Visual Flight Rules (VFR) and Instrument Flight Rules (IFR).</li> <li>2. The airplane is not approved for ditching.</li> <li>3. The airplane is not approved for flight into known or forecasted icing.</li> </ol>
Production Basis	<p>None.</p> <p>All serial numbers are manufactured by GippsAero Pty Ltd. Prior to issue of a Certificate of Airworthiness for each aircraft, a representative of the Authority must perform a detailed inspection for workmanship, materials, conformity with the approved technical data and a check of the flight characteristics.</p>
Equipment	<ol style="list-style-type: none"> <li>1. Table 2-7 of the <i>Pilot's Operating Handbook and Approved Flight Manual</i>, D01-01-01 lists the basic equipment required for certification.</li> <li>2. The current version of the <i>Pilot's Operating Handbook and Approved Flight Manual</i> D01-01-01 must be carried on board.</li> <li>3. Other equipment may be required, to meet applicable operational regulations.</li> </ol>
Placards	<p>All placards listed in Chapter 2 of the <i>Pilot's Operating Handbook and Approved Flight Manual</i>, D01-01-01 must be installed in the stated locations.</p>

## NOTES

### 1. Weight and Balance.

A current weight and balance report including a list of equipment included in the certificated empty weight, an approved load data sheet and an approved loading system must be provided for each aircraft at the time of issue of a Certificate of Airworthiness.

The certificated empty weight and the corresponding centre of gravity location includes full oil 9.83 kg at -499 mm, unusable fuel 6.4 kg in main tanks at +2280 mm and 7.2 kg of fuel in collector tank at +1184mm.

### 2. Revision Status

Unless otherwise stated, later CASA approved documentation revisions are accepted as meeting type data requirements.

*Pilot's Operating Handbook and Approved Flight Manual*, D01-01-01, dated 31 March 2017, and Chapter 4 *Airworthiness Limitations of the Airplane Maintenance Manual*, D01-00-01, dated 7 April 2017 where both approved by CASA on 19 May 2017.

### 3. Instructions for Continued Airworthiness

The GA10 *Airplane Maintenance Manual* (AMM) D01-00-01 constitutes the Instructions for Continued Airworthiness (ICA) that are required to be provided by the holder of this Type Certificate under CASR 21.050(b). This document includes the mandatory CASA approved *Airworthiness Limitations* in Chapter 4.

4. Visible moisture operational limits have been imposed at and below -18°C OAT to ensure the absence of engine inlet icing.
5. A 20 knot cross component of wind has been demonstrated to be safe for taxiing, take-off and landing.
6. Service and operational documents for the Model GA10 will state the manufacturer as GippsAero Pty Ltd.
7. The Model GA10 is referred to in manufacturer's marketing literature as the "AIRVAN10". This name is a marketing designation only and is not part of the official model designation.
8. Noise Standard
  - A. Airservices Australia has found that the GA10 is compliant with Volume 1 of Annex 16.
  - B. FAA has found that the GA10 is compliant with 14 CFR Part 36, effective December 1, 1969 with Amendments 36-1 through Amendment 36-30 *"Noise Standards: Aircraft Type and Airworthiness Certification"*.
9. Emissions Standard

The FAA has found that the GA10 is compliant with 14 CFR Part 34, effective September 10, 1990 including Amendments 34-1 through Amendment 34-5A *"Fuel Venting and Exhaust Emission Requirements For Turbine Engine Powered Airplanes"*.

#### **TCDS Revision History**

- |            |  |
|------------|--|
| Revision 0 | 19 May 2017 - Initial Issue.   |
| Revision 1 | 19 May 2017 – Type Certificate Holder changed from<br>GippsAero Pty Ltd, ABN 33 140 764 138, to<br>Airvan10 Pty Ltd, ACN 609 777 273 |

# Appendix A

## CASA SPECIAL CONDITION SC23.001

This Special Condition is prescribed under the provisions of CASR 21.016(1) and forms part of the GA10 Type Certification Basis under CASR 21.017(1)(b).

The certification basis for the GA10 project includes 14 CFR Part 23 with amendments up to and including Amendment 23-62, which became effective on 31 January 2012. A number of errors are known to have been introduced by Amendment 23-62. This Special Condition, which is issued for the GippsAero GA10 airplane, corrects the FAA 14 CFR Part 23 Amendment 23-62 errors that are applicable to the GA10. This airplane does not have novel or unusual design features, however because of the Amendment 23-62 errors, the normally applicable airworthiness regulations do not contain adequate or appropriate safety standards. This special condition contains the additional safety standards that CASA considers necessary to establish a level of safety equivalent to that established by the existing airworthiness standards for comparable aircraft.

The following paragraphs are affected by this Special Condition.

§23.63, §23.67, §23.73, §23.77, §23.221, §23.1545, §23.1583.

These 14 CFR Part 23 paragraphs are to be replaced in their entirety by the text in the body of this Special Condition.

Errors were also introduced into the following paragraphs, but these errors are not applicable to the GA10 design, and therefore these paragraphs are *not* included in this Special Condition:-

§23.45, §23.51, §23.161, §23.181, §23.251, §23.253, §23.571, §23.785, §23.831, §23.1195, §23.1197, §23.1199, §23.1201, §23.1527.

The altered text is shown in ***bold italics*** below. Non-applicable parts are shown in grey shade, but are included here for completeness.



## **CFR 14 Reference – FAR 23 Amendment 23-62**

### **Replace § 23.63 with**

#### **Sec. 23.63**

#### **Climb: General.**

(a) Compliance with the requirements of Secs. 23.65, 23.66, 23.67, 23.69, and 23.77 must be shown--

(1) Out of ground effect; and

(2) At speeds that are not less than those at which compliance with the powerplant cooling requirements of Secs. 23.1041 to 23.1047 has been demonstrated; and

(3) Unless otherwise specified, with one engine inoperative, at a bank angle not exceeding 5 degrees.

(b) For normal, utility, and acrobatic category reciprocating engine-powered airplanes of 6,000 pounds or less maximum weight, compliance must be shown with Sec. 23.65(a), Sec. 23.67(a), where appropriate, and Sec. 23.77(a) at maximum take-off or landing weight, as appropriate, in a standard atmosphere.

(c) For *each of the following normal, utility, and acrobatic category airplanes:*

(1) reciprocating engine-powered airplanes of more than 6,000 pounds maximum weight, (2) single engine turbines, and (3) multiengine turbine airplanes of 6,000 pounds or less maximum weight, compliance must be shown at weights as a function of airport altitude and ambient temperature within the operational limits established for take-off and landing, respectively, with:

(1) *For reciprocating engine-power airplanes of more than 6,000 pounds maximum weight:*

(i) *Sections 23.65(b) and 23.67(b)(1) and (2), where appropriate, for take-off and*

(ii) *Section 23.67(b)(2), where appropriate, and § 23.77(b), for landing,*

(2) *For single-engine turbines:*

(i) *Section 23.65(b), for take-off, and*

(ii) *Section 23.77(b) for landing.*

(3) *For multiengine turbine airplanes of 6,000 pounds or less maximum weight:*

(i) *For take-off, § 23.65(b) and*

(A) *If a turbopropeller-power airplane, § 23.67(b)(1), and (2), where appropriate.*

(B) *If a jet airplane, § 23.67(c)(1), and (2), where appropriate.*

(ii) *For landing, § 23.77(b) and*

(A) *If a turbopropeller-powered airplane, § 23.67(b)(2), where appropriate.*

(B) *If a jet airplane, § 23.67(c)(2), where appropriate.*

(d) For multiengine turbine airplanes over 6,000 pounds maximum weight in the normal, utility, and acrobatic category and commuter category airplanes, compliance must be shown at weights as a function of airport altitude and ambient temperature within the operational limits established for take-off and landing, respectively, with—

(1) *If a normal, utility, or acrobatic category, turbopropeller-powered airplane:*

(i) *Section 23.67(b)(1), and (2), where appropriate, for take-off, and*

(ii) *Section 23.67(b)(2), where appropriate, and § 23.77(c), for landing.*

(2) *If a jet or commuter category airplane:*

(i) *Section 23.67(d)(1), (2), and (3), where appropriate, for take-off, and*

(ii) *Section 23.67(d)(3), and (4), where appropriate, and § 23.77(c) for landing.*

**Replace § 23.67 with**

**Sec. 23.67**

**Climb: One engine inoperative.**

(a) For normal, utility, and acrobatic category reciprocating **multiengine**-powered airplanes of 6,000 pounds or less maximum weight, the following apply:

(1) Except for those airplanes that meet the requirements prescribed in Sec. 23.562(d), each airplane with a  $V_{S0}$  of more than 61 knots must be able to maintain a steady climb gradient of at least 1.5 percent at a pressure altitude of 5,000 feet with the--

- (i) Critical engine inoperative and its propeller in the minimum drag position;
- (ii) Remaining engine(s) at not more than maximum continuous power;
- (iii) Landing gear retracted;
- (iv) Wing flaps retracted; and
- (v) Climb speed not less than  $1.2 V_{S1}$ .

(2) For each airplane that meets the requirements prescribed in Sec. 23.562(d), or that has a  $V_{S0}$  of 61 knots or less, the steady gradient of climb or descent at a pressure altitude of 5,000 feet must be determined with the--

- (i) Critical engine inoperative and its propeller in the minimum drag position;
- (ii) Remaining engine(s) at not more than maximum continuous power;
- (iii) Landing gear retracted;
- (iv) Wing flaps retracted; and
- (v) Climb speed not less than  $1.2 V_{S1}$ .

(b) For normal, utility, and acrobatic category reciprocating **multiengine**-powered airplanes of more than 6,000 pounds maximum weight, and **multiengine** turbopropeller-powered airplanes in the normal, utility, and acrobatic category--

(1) The steady gradient of climb at an altitude of 400 feet above the take-off must be no less than 1 percent with the—

- (i) Critical engine inoperative and its propeller in the minimum drag position;
- (ii) Remaining engine(s) at take-off power;
- (iii) Landing gear retracted;
- (iv) Wing flaps in the take-off position(s); and
- (v) Climb speed equal to that achieved at 50 feet in the demonstration of Sec. 23.53.

(2) The steady gradient of climb must not be less than 0.75 percent at an altitude of 1,500 feet above the take-off surface, or landing surface, as appropriate, with the--

- (i) Critical engine inoperative and its propeller in the minimum drag position;
- (ii) Remaining engine(s) at not more than maximum continuous power;

- (iii) Landing gear retracted;
  - (iv) Wing flaps retracted; and
  - (v) Climb speed not less than  $1.2V_{s1}$ .
- (c) For normal, utility, and acrobatic category *multiengine* jets of 6,000 pounds or less maximum weight--
- (1) The steady gradient of climb at an altitude of 400 feet above the take-off must be no less than 1.2 percent with the--
    - (i) Critical engine inoperative;
    - (ii) Remaining engine(s) at take-off power;
    - (iii) Landing gear retracted;
    - (iv) Wing flaps in the take-off position(s); and
    - (v) Climb speed equal to that achieved at 50 feet in the demonstration of Sec. 23.53.
  - (2) The steady gradient of climb may not be less than 0.75 percent at an altitude of 1,500 feet above the take-off surface, or landing surface, as appropriate, with the--
    - (i) Critical engine inoperative;
    - (ii) Remaining engine(s) at not more than maximum continuous power;
    - (iii) Landing gear retracted;
    - (iv) Wing flaps retracted; and
    - (v) Climb speed not less than  $1.2 V_{s1}$ .
- (d) For *multiengine* jets over 6,000 pounds maximum weight in the normal, utility and acrobatic category and commuter category airplanes, the following apply:
- (1) Take-off; landing gear extended. The steady gradient of climb at the altitude of the take-off surface must be measurably positive for two-engine airplanes, not less than 0.3 percent for three-engine airplanes, or 0.5 percent for four-engine airplanes with--
    - (i) The critical engine inoperative and its propeller, *if applicable*, in the position it rapidly and automatically assumes;
    - (ii) The remaining engine(s) at take-off power;
    - (iii) The landing gear extended, and all landing gear doors open;
    - (iv) The wing flaps in the take-off position(s);
    - (v) The wings level; and
    - (vi) A climb speed equal to  $V_2$ .
  - (2) Take-off, landing gear retracted. The steady gradient of climb at an altitude of 400 feet above the take-off surface must not be less than 2.0 percent for two-engine airplanes, 2.3 percent for three-engine airplanes, and 2.6 percent for four-engine airplanes with--
    - (i) The critical engine inoperative and its propeller, *if applicable*, in the position it rapidly and automatically assumes;
    - (ii) The remaining engine(s) at take-off power;
    - (iii) The landing gear retracted;
    - (iv) The wing flaps in the take-off position(s);
    - (v) A climb speed equal to  $V_2$ .
  - (3) Enroute. The steady gradient of climb at an altitude of 1,500 feet above the take-off or landing surface, as appropriate, must be not less than 1.2 percent for two-engine airplanes, 1.5 percent for three-engine airplanes, and 1.7 percent for four-engine airplanes with--

- (i) The critical engine inoperative and its propeller, *if applicable*, in the minimum drag position;
  - (ii) The remaining engine(s) at not more than maximum continuous power;
  - (iii) The landing gear retracted;
  - (iv) The wing flaps retracted; and
  - (v) A climb speed not less than  $1.2 V_{S1}$ .
- (4) Discontinued approach. The steady gradient of climb at an altitude of 400 feet above the landing surface must be not less than 2.1 percent for two-engine airplanes, 2.4 percent for three-engine airplanes, and 2.7 percent for four-engine airplanes, with--
- (i) The critical engine inoperative and its propeller, *if applicable*, in the minimum drag position;
  - (ii) The remaining engine(s) at take-off power;
  - (iii) Landing gear retracted;
  - (iv) Wing flaps in the approach position(s) in which  $V_{S1}$  for these position(s) does not exceed 110 percent of the  $V_{S1}$  for the related all-engines-operating landing position(s); and
  - (v) A climb speed established in connection with normal landing procedures but not exceeding  $1.5V_{S1}$ .

**Replace § 23.73 with**

**Sec. 23.73**

**Reference landing approach speed.**

(a) For normal, utility, and acrobatic category reciprocating engine-powered airplanes of 6,000 pounds or less maximum weight, the reference landing approach speed,  $V_{REF}$ , may not be less than the greater of  $V_{MC}$ , determined in Sec. 23.149(b) with the wing flaps in the most extended take-off position, and  $1.3 V_{S1}$ .

***(b) For each of the following normal, utility, and acrobatic category airplanes: (1) reciprocating engine-powered airplane of more than 6,000 pounds maximum weight, (2) turbine powered airplane of 6,000 pounds or less maximum weight, and, (3) single engine turbine powered airplane of more than 6,000 pounds maximum weight, the reference landing approach speed,  $V_{REF}$ , may not be less than the greater of  $V_{MC}$ , determined in Sec. 23.149(c), and  $1.3 V_{S1}$ .***

(c) For normal, utility, and acrobatic category ***multiengine turbine powered airplanes over 6,000 pounds maximum weight and commuter category airplanes***, the reference landing approach speed,  $V_{REF}$ , may not be less than the greater of  $1.05 V_{MC}$ , determined in Sec. 23.149(c), and  $1.3 V_{S1}$ .

**Replace § 23.77 with**

**Sec. 23.77**

**Balked landing.**

(a) Each normal, utility, and acrobatic category reciprocating engine-powered airplane of 6,000 pounds or less maximum weight must be able to maintain a steady gradient of climb at sea level of at least 3.3 percent with--

- (1) Take-off power on each engine;
- (2) The landing gear extended;
- (3) The wing flaps in the landing position, except that if the flaps may safely be retracted in two seconds or less without loss of altitude and without sudden changes of angle of attack, they may be retracted; and
- (4) A climb speed equal to  $V_{REF}$ , as defined in Sec. 23.73(a).

**(b) Each of the following normal, utility, and acrobatic category airplanes:**

*(1) reciprocating engine-powered airplane of more than 6,000 pounds maximum weight, (2) turbine powered airplane of 6,000 pounds or less maximum weight, and (3) single engine turbine powered airplane of more than 6,000 pounds maximum weight, must be able to maintain a steady gradient of climb of at least 2.5 percent with--*

- (1) Not more than the power that is available on each engine eight seconds after initiation of movement of the power controls from the minimum flight idle position;*
- (2) The landing gear extended;*
- (3) The wing flaps in the landing position; and*
- (4) A climb speed equal to  $V_{REF}$ , as defined in Sec. 23.73(b).*

(c) Each normal, utility, and acrobatic multiengine turbine powered airplane over 6,000 pounds maximum weight and each commuter category airplane must be able to maintain a steady gradient of climb of at least 3.2 percent with--

- (1) Not more than the power that is available on each engine eight seconds after initiation of movement of the power controls from minimum flight idle position;
- (2) Landing gear extended;
- (3) Wing flaps in the landing position; and
- (4) A climb speed equal to  $V_{REF}$ , as defined in Sec. 23.73(c).

**Replace § 23.221 with**

**Sec. 23.221**

**Spinning.**

(a) Normal category airplanes. A single-engine, normal category airplane must be able to recover from a one-turn spin or a three-second spin, whichever takes longer, in not more than one additional turn after initiation of the first control action for recovery, or demonstrate compliance with the optional spin resistant requirements of this section.

(1) The following apply to one turn or three-second spins:

- (i) For both the flaps-retracted and flaps-extended conditions, the applicable airspeed limit and positive limit manoeuvring load factor must not be exceeded;
- (ii) No control forces or characteristic encountered during the spin or recovery may adversely affect prompt recovery;
- (iii) It must be impossible to obtain unrecoverable spins with any use of the flight or engine power controls either at the entry into or during the spin; and
- (iv) For the flaps-extended condition, the flaps may be retracted during the recovery but not before rotation has ceased.

(2) At the applicant's option, the airplane may be demonstrated to be spin resistant by the following:

- (i) During the stall manoeuvres contained in Sec. 23.201, the pitch control must be pulled back and held against the stop. Then, using ailerons and rudders in the proper direction, it must be possible to maintain wings-level flight within 15 degrees of bank and to roll the airplane from a 30 degree bank in one direction to a 30 degree bank in the other direction;
- (ii) Reduce the airplane speed using pitch control at a rate of approximately 1 knot per second until the pitch control reaches the stop; then, with the pitch control pulled back and held against the stop, apply full rudder control in a manner to promote spin entry for a period of 7 seconds or through a 360 degree heading change, whichever occurs first. If the 360 degree heading change is reached first, it must have taken no fewer than 4 seconds. This manoeuvre must be performed first with the ailerons in the neutral position, and then with the ailerons deflected opposite the direction of turn in the most adverse manner. Power and airplane configuration must be set in accordance with Sec. 23.201(f) without change during the manoeuvre. At the end of 7 seconds or a 360 degree heading change, the airplane must respond immediately and normally to primary flight controls applied to regain coordinated, unstalled flight without reversal of control effect and without exceeding the temporary control forces specified by Sec. 23.143(c); and
- (iii) Compliance with Secs. 23.201 and 23.203 must be demonstrated with the airplane in uncoordinated flight, corresponding to one ball width displacement on a slip-skid indicator, unless one ball width displacement cannot be obtained with full rudder, in which case the demonstration must be with full rudder applied.

(b) Utility category airplanes. A utility category airplane must meet the requirements of paragraph (a) of this section. In addition, the requirements of paragraph (c) of this section and Sec. 23.807(b)(6) must be met if approval for spinning is requested.

(c) Acrobatic category airplanes. An acrobatic category airplane must meet the spin requirements of paragraph (a) of this section and Sec. 23.807(b)(5). In addition, the following requirements must be met in each configuration for which approval for spinning is requested:

- (1) The airplane must recover from any point in a spin up to and including six turns, or any greater number of turns for which certification is requested, in not more than one and one-half additional turns after initiation of the first control action for recovery. However, beyond 3 turns, the spin may be discontinued if spiral characteristics appear.
- (2) The applicable airspeed limits and limit manoeuvring load factors must not be exceeded. For flaps-extended configurations for which approval is requested, the flaps must not be retracted during the recovery.
- (3) It must be impossible to obtain unrecoverable spins with any use of the flight or engine power controls either at the entry into or during the spin.

(4) There must be no characteristics during the spin (such as excessive rates of rotation or extreme oscillatory motion) that might prevent a successful recovery due to disorientation or incapacitation of the pilot.

**Replace § 23.1545 with**

**Sec. 23.1545**

**Airspeed indicator.**

(a) Each airspeed indicator must be marked as specified in paragraph (b) of this section, with the marks located at the corresponding indicated airspeeds.

(b) The following markings must be made:

(1) For the never-exceed speed  $V_{NE}$ , a radial red line.

(2) For the caution range, a yellow arc extending from the red line specified in paragraph (b)(1) of this section to the upper limit of the green arc specified in paragraph (b)(3) of this section.

(3) For the normal operating range, a green arc with the lower limit at  $V_{S1}$  with maximum weight and with landing gear and wing flaps retracted, and the upper limit at the maximum structural cruising speed  $V_{NO}$  established under Sec. 23.1505(b).

(4) For the flap operating range, a white arc with the lower limit at the maximum weight, and the upper limit at the flaps-extended speed  $V_{FE}$  established under Sec. 23.1511.

(5) For reciprocating multiengine-powered airplanes of 6,000 pounds or less maximum weight, for the speed at which compliance has been shown with Sec. 23.69(b) relating to rate of climb at maximum weight and at sea level, a blue radial line.

(6) For reciprocating multiengine-powered airplanes of 6,000 pounds or less maximum weight, for the maximum value of minimum control speed,  $V_{MC}$ , (one-engine-inoperative) determined under Sec. 23.149(b), a red radial line.

(c) If  $V_{NE}$  or  $V_{NO}$  vary with altitude, there must be means to indicate to the pilot the appropriate limitations throughout the operating altitude range.

(d) Paragraphs (b)(1) through (b)(3) and paragraph (c) of this section do not apply to airplanes for which a maximum operating speed  $V_{MO}/M_{MO}$  is established under Sec. 23.1505(c). For those airplanes, there must either be a maximum allowable airspeed indication showing the variation of  $V_{MO}/M_{MO}$  with altitude or compressibility limitations (as appropriate), or a radial red line marking for  $V_{MO}/M_{MO}$  must be made at lowest value of  $V_{MO}/M_{MO}$  established for any altitude up to the maximum operating altitude for the airplane.

**Replace § 23.1583 with**

**Sec. 23.1583**

**Operating limitations.**

The Airplane Flight Manual must contain operating limitations determined under this Part 23, including the following--

(a) Airspeed limitations. The following information must be furnished:

(1) Information necessary for the marking of the airspeed limits on the indicator as required in Sec. 23.1545, and the significance of each of those limits and of the colour coding used on the indicator.

(2) The speeds  $V_{MC}$ ,  $V_O$ ,  $V_{LE}$ , and  $V_{LO}$ , if established, and their significance.

(3) In addition, for turbine powered commuter category airplanes--

(i) The maximum operating limit speed,  $V_{MO}/M_{MO}$  and a statement that this speed must not be deliberately exceeded in any regime of flight (climb, cruise, or descent) unless a higher speed is authorized for flight test or pilot training;

(ii) If an airspeed limitation is based upon compressibility effects, a statement to this effect and information as to any symptoms, the probable behaviour of the airplane, and the recommended recovery procedures; and

(iii) The airspeed limits must be shown in terms of  $V_{MO}/M_{MO}$  instead of  $V_{NO}$  and  $V_{NE}$ .

(b) Powerplant limitations. The following information must be furnished:

(1) Limitations required by Sec. 23.1521.

(2) Explanation of the limitations, when appropriate.

(3) Information necessary for marking the instruments required by Secs. 23.1549 through Sec. 23.1553.

(c) Weight. The airplane flight manual must include--

(1) The maximum weight; and

(2) The maximum landing weight, if the design landing weight selected by the applicant is less than the maximum weight.

(3) ***For each of the following normal, utility, and acrobatic category airplanes:***(1) reciprocating engine-powered airplanes of more than 6,000 pounds maximum weight, (2) single-engine turbines, and (3) multiengine *turbines* of 6,000 pounds or less maximum weight, performance operating limitations as follows--

(i) The maximum take-off weight for each airport altitude and ambient temperature within the range selected by the applicant at which the airplane complies with the climb requirements of Sec. **23.63(c)(1)(i), (c)(2)(i), or (c)(3)(i), as appropriate.**

(ii) The maximum landing weight for each airport altitude and ambient temperature within the range selected by the applicant at which the airplane complies with the climb requirements of Sec. **23.63(c)(1)(ii), (c)(2)(ii), or (c)(3)(ii), as appropriate.**



(4) For normal, utility, and acrobatic category multiengine *turbines* over 6,000 pounds and commuter category airplanes, the maximum take-off weight for each airport altitude and ambient temperature within the range selected by the applicant at which--

(i) The airplane complies with the climb requirements of Sec. 23.63(d)(1)(i), or (d)(2)(i), *as appropriate*; and

(ii) The accelerate-stop distance determined under Sec. 23.55 is equal to the available runway length plus the length of any stopway, if utilized; and either:

(A) The take-off distance determined under Sec. 23.59(a) is equal to the available runway length; or

(B) At the option of the applicant, the take-off distance determined under Sec. 23.59(a) is equal to the available runway length plus the length of any clearway and the take-off run determined under Sec. 23.59(b) is equal to the available runway length.

(5) For normal, utility, and acrobatic category multiengine *turbines* over 6,000 pounds and commuter category airplanes, the maximum landing weight for each airport altitude within the range selected by the applicant at which--

(i) The airplane complies with the climb requirements of Sec. 23.63(d)(1)(ii), or (d)(2)(ii), *as appropriate* for ambient temperatures within the range selected by the applicant; and

(ii) The landing distance determined under Sec. 23.75 for standard temperatures is equal to the available runway length.

(6) The maximum zero wing fuel weight, where relevant, as established in accordance with Sec. 23.343.

(d) Centre of gravity. The established centre of gravity limits.

(e) Manoeuvres. The following authorized manoeuvres, appropriate airspeed limitations, and unauthorized manoeuvres, as prescribed in this section.

(1) Normal category airplanes. No acrobatic manoeuvres, including spins, are authorized.

(2) Utility category airplanes. A list of authorized manoeuvres demonstrated in the type flight tests, together with recommended entry speeds and any other associated limitations. No other manoeuvre is authorized.

(3) Acrobatic category airplanes. A list of approved flight manoeuvres demonstrated in the type flight tests, together with recommended entry speeds and any other associated limitations.

(4) Acrobatic category airplanes and utility category airplanes approved for spinning. Spin recovery procedure established to show compliance with Sec. 23.221(c).

(5) Commuter category airplanes. Manoeuvres are limited to any manoeuvre incident to normal flying, stalls, (except whip stalls) and steep turns in which the angle of bank is not more than 60 degrees.

(f) Manoeuvre load factor. The positive limit load factors in g's, and, in addition, the negative limit load factor for acrobatic category airplanes.

(g) Minimum flight crew. The number and functions of the minimum flight crew determined under Sec. 23.1523.

(h) Kinds of operation. A list of the kinds of operation to which the airplane is limited or from which it is prohibited under Sec. 23.1525, and also a list of installed equipment that affects any operating limitation and identification as to the equipment's required operational status for the kinds of operation for which approval has been given.

(i) Maximum operating altitude. The maximum altitude established under Sec. 23.1527.

- (j) Maximum passenger seating configuration. The maximum passenger seating configuration.
- (k) Allowable lateral fuel loading. The maximum allowable lateral fuel loading differential, if less than the maximum possible.
- (l) Baggage and cargo loading. The following information for each baggage and cargo compartment or zone--
  - (1) The maximum allowable load; and
  - (2) The maximum intensity of loading.
- (m) Systems. Any limitations on the use of airplane systems and equipment.
- (n) Ambient temperatures. Where appropriate, maximum and minimum ambient air temperatures for operation.
- (o) Smoking. Any restrictions on smoking in the airplane.
- (p) Types of surface. A statement of the types of surface on which operations may be conducted. (See Sec. 23.45(g) and Sec. 23.1587(a)(4), (c)(2), and (d)(4)).

**The remainder of the 14 CFR Part 23 amendment 23-62 errors identified in FAA ELOS Memo# TC00769CE-A-G-9 have been assessed as NOT APPLICABLE to the GA10 aircraft.**

---