
Type Acceptance Report

TAR 2/21B/15 – Revision 5

GIPPSAERO GA8

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Executive Summary

New Zealand Type Acceptance has been granted to the GippsAero Model GA8 Airvan Series based on validation of Australian Type Certificate number VA503. There are no special requirements for import.

Applicability is currently limited to the Models and/or serial numbers detailed in Appendix 1, which are now eligible for the issue of an Airworthiness Certificate in the Standard Category in accordance with NZCAR §21.177, subject to any outstanding New Zealand operational requirements being met. (See Section 5 of this report for a review of compliance of the basic type design with the operating Rules.) Additional variants or serial numbers approved under the foreign type certificate can become type accepted after supply of the applicable documentation, in accordance with the provisions of NZCAR §21.43(c).

NOTE: The information in this report was correct as at the date of issue. The report is generally only updated when an application is received to revise the Type Acceptance Certificate. For details on the current type certificate holder and any specific technical data, refer to the latest revision of the State-of-Design Type Certificate Data Sheet referenced herein.

1. Introduction

This report details the basis on which Type Acceptance Certificate No.2/21B/15 was granted in the Standard Category in accordance with NZCAR Part 21 Subpart B.

Specifically the report aims to:

- (a) Specify the foreign type certificate and associated airworthiness design standard used for type acceptance of the model(s) in New Zealand; and
- (b) Identify any special conditions for import applicable to any model(s) covered by the Type Acceptance Certificate; and
- (c) Identify any additional requirements which must be complied with prior to the issue of a NZ Airworthiness Certificate or for any subsequent operations.

2. Aircraft Certification Details

(a) State-of-Design Type and Production Certificates:

Manufacturer:	GippsAero Pty Ltd [from 6 May 2010] Gippsland Aeronautics Pty Ltd
TC Holder:	GA8 Airvan Pty Ltd [Since Change 11 dated 08.08.2006]
Type Certificate:	VA503
Issued by:	Civil Aviation Safety Authority
Production Approval:	PC No.793691 [from 6 May 2010] PC No.053049

(b) Models Covered by the Part 21B Type Acceptance Certificate:

- (i) **Model:** GA8
- MCTOW 1905 kg (4200 lb) with GA8-SB-2011-66
1814 kg (4000 lb)
- Max. No. of Seats: 8
- Noise Standard: ICAO Annex 16 Volume 1 Chapter 10
- Engine:** Lycoming IO-540-K1A5
Type Certificate: 1E4
Issued by: Federal Aviation Administration
- Propeller:** Hartzell HC-C2YR-1BF/F8475R
Type Certificate: P-920
Issued by: Federal Aviation Administration
- Hartzell HC-C3YR-1RF/F8068
Type Certificate: P25EA
Issued by: Federal Aviation Administration
(Installed per Engineering Release GA8-9661149 [Option 149]
or GA8-SB-2009-62)
- (ii) **Model:** GA8-TC 320
- MCTOW 1905 kg (4200 lb) with GA8-SB-2011-65
1814 kg (4000 lb)
- Max. No. of Seats: 8
- Noise Standard: ICAO Annex 16 Volume 1 Chapter 10
- Engine:** Lycoming TIO-540-AH1A
Type Certificate: E14EA
Issued by: Federal Aviation Administration
- Propeller:** Hartzell HC-C3YR-1RF/F8068
Type Certificate: P25EA
Issued by: Federal Aviation Administration

3. Application Details and Background Information

The application for New Zealand type acceptance of the GA8 was from the manufacturer, submitted through CASA, dated 1 May 2002. The first-of-type example was serial number GA8-02-017 registered as ZK-SAF for Air Safaris and Services.

Type Acceptance Certificate No. 2/21B/15 was granted on 29 May 2002 to the Gippsland Model GA8 based on validation of CASA Type Certificate VA503. Specific applicability is limited to the coverage provided by the operating documentation supplied. There are no special requirements for import into New Zealand.

The GA8 is a semi-monococque high wing strut-braced monoplane, with fixed spring steel main undercarriage and a coil spring steerable nose gear with oil shock damping. It is designed to seat 8 occupants in 4 rows, with easily removable seats for freight or parachute operations. With the original two-bladed propeller the engine is derated to 275 shp at a maximum RPM of 2500 to meet ICAO Annex 6 noise criteria. However the propeller pitch control lever has a gate which allows operation in an emergency above the gate in the extended red arc of the tachometer up to 2700 RPM/300 shp. The aircraft can use 2700 RPM under FAA type certification and meets FAR Part 36 noise requirements in that configuration. The aircraft can be converted from the ICAO noise configuration (2500 RPM limit) to the FAA noise configuration (2700 RPM limit) by embodiment of Service Bulletin SB-GA8-2005-10 or SB-GA8-2005-16 for the reverse. With the 2-blade propeller the use of 2700 RPM is limited in the Flight Manual to take-off operations and a maximum period of two minutes, but is unlimited with the 3-blade propeller.

This report was raised to Revision 1 to include later production aircraft certificated to FAR 23 Amendment 54, which use different manuals. The applicant was the manufacturer and the first-of-type example was serial number GA8-03-034, registered as ZK-LOR. Type Acceptance Certificate 2/21B/15 was amended to Revision 1 on 10 September 2003.

The physical differences between Amendment 48 and Amendment 54 standard aircraft include: new interior panels, rear luggage locker, and trim position and loading placards; new pitot heat warning sensor; upgraded caution/warning light system; volt/amp indicator replacement; alternator excitation system installation; pitot drain installation; and new manuals. Earlier aircraft can be upgraded to Amendment 54 configuration by incorporation of Service Bulletin SB-GA8-2003-04, which includes all of the above changes.

The manufacturer Gippsland Aeronautics subsequently applied for a further revision to the Type Acceptance certificate to update the Operating Limitations to include IFR operations. IFR operational capability involved revisions to the TCDS, the two flight manuals, the two Service Manuals, a Service Bulletin (SB-GA8-2003-08) detailing the required equipment for IFR operations and the Gippsland drawing covering the installation where applicable. Type Acceptance Certificate 2/21B/15 was amended to Revision 2 on 26 November 2003.

This report was raised to Revision 3 to include the turbocharged Model GA8-TC 320. The application was from the manufacturer and type acceptance was granted on 3 September 2009. The new version uses the TIO-540-AH1A engine rated at 300 HP @ 38 in. Hg MAP. The first-of-type example was serial number GA8-TC 320-09-144 registered ZK-SAU.

Revision 4 was issued under CAA Work Request 13/21B/5 to add the Increased Gross Weight option which was approved at Revision 17 to the TCDS, and is embodied by Service Bulletin SB-GA8-2011-65 (GA8-TC 320) or SB-GA8-2011-66 (GA8). This specifies use of either a Flight Manual Supplement, C01-04-76 (GA8), C01-04-79 (GA8 with 3-blade propeller) or C01-04-78 (GA8-TC 320), or for the GA8-TC 320 there is also the option of a complete new Flight Manual C01-01-10. The opportunity was also taken to note the change in manufacturer name and add the 3-blade propeller option for the GA8.

Revision 5 was issued to include aircraft with the two-blade propeller operating at 2700 RPM, which use the C01-01-07 flight manual. The applicant was the operator, Southern Alps Air Ltd, and the first-of-type example was serial number GA8-04-063 registered as ZK-MLF. Type acceptance was granted on 25 October 2016.

4. NZCAR §21.43 Data Requirements

The type data requirements of NZCAR Part 21B Para §21.43 have been satisfied by supply of the following documents:

(1) ICAO Type certificate:

CASA Type Certificate Number VA503 Issue 2 dated 10 October 2000
(Issue 1 dated 10 March 1999 was for a Provisional Type Certificate.)

Type Certificate Data Sheet number VA503 at Revision 21 dated 04 March 2015
– Model GA8 approved 10 October 2000
– Model GA8-TC 320 approved 9 February 2009

(2) Airworthiness design requirements:

(i) *Airworthiness Design Standards:*

The original certification basis of the GA8 is Federal Aviation Regulations Part 23, at Amendment 48, except paragraph FAR §23.629, which is at Amendment 45 (Amendment 48 introduced new flutter requirements that required flight testing as well as compliance with AEE Report No.45.) This certification basis is retained for serial numbers GA8-00-004 through GA8-03-025. A revised certification basis of FAR 23 at Amendment 54 for all paragraphs is applicable to GA8 serial numbers GA8-03-026 and up. Noise certification is unchanged for these aircraft.

This is an acceptable certification basis in accordance with NZCAR Part 21B Para §21.41, as FAR Part 23 is the basic standard for Normal Category Airplanes called up under Part 21 Appendix C. There are no non-compliances and no additional special conditions have been prescribed by the Director under §21.23.

(ii) *Special Conditions:*

Nil

(iii) *Equivalent Level of Safety Findings:*

Nil

(iv) *Airworthiness Limitations:*

See CASA-Approved Service Manual Chapter 4 – Airworthiness Limitations

(3) Aircraft Noise and Engine Emission Standards:

(i) *Environmental Standard:*

The GA8 Series has been certificated against the noise requirements of ICAO Annex 16 Volume 1 Chapter 10, Third Edition Amendment 6.

(ii) *Compliance Listing:*

DTRS Aircraft Noise Certificate No. NC01/01 – Gippsland Model GA8 Airvan at MAUW 1814 kg and takeoff power de-rated to 275hp at 2500 RPM:
Corrected Noise Level: 87.9 dB(A) with a 90% confidence limit of ±0.2dB(A)

Note: GA8 aircraft with take-off limits of 2700 RPM meet FAR 36 Appendix G at Amendment 24, require SB-GA8-2005-10 and can use a different Flight Manual, or an FM Supplement, depending on propeller configuration. No noise testing was done for 2700 RPM, because it is only for a maximum period of two minutes.

DITRDLG Aircraft Noise Certificate No. NC2009/02 – Gippsland GA8-TC 320 with TIO-540/HC-C3YR-1RF/F8068 at a maximum weight of 1814 kg:
Corrected Noise Level: 82.9 dB(A) with a 90% confidence limit of ± 0.2 dB(A)

Technical Report C16-99-51 – GippsAero GA8-TC 320 at 4200lbs FAR 36
Acoustical Test Report (at Amendment 36-28):
Corrected Mean Noise Level: 85.2 dB(A) with a 90% Confidence Level of ± 0.2 dB(A) – Aircraft with optional cargo pod
Corrected Mean Noise Level: 84.8 dB(A) [90% CL ± 0.3] – without cargo pod

(4) Certification compliance listing:

Certification Reports – List of reports used for certification of the GA8 by CASA
Engineering Release GA8-970001 – GA-8 Provis. Master Data Package (Dwg List)

Gippsland Technical Report C98-00-01, Issue J – GA8 FAR23 Compliance Report
Technical Report C98-00-07 – GA8 FAR 23 Amdt 54 Supplementary Compliance
Technical Report C98-00-08 – GA-8 IFR Abbreviated Compliance Statement
Technical Report C98-00-41 – Increased Gross Weight Compliance Statement
Technical Report C98-00-48 – GA8 Three Blade Propeller Compliance Statement
Technical Report C16-99-30 – GA8 and GA8-TC320 IGW Flight Test Report

Technical Report C98-00-18 – GA8-TC 320 Engine Compliance Statement
Technical Report C16-99-15 – GA8-TC 320 Certification Flight Test Report
Gippsland Technical Report C71-99-03 – GA8-TC 320 Structural Test Report
Technical Report C98-00-69 – GA8-TC 320 IGW Compliance Statement CS23
Technical Report C16-99-38 – GA8 Three Bladed Propeller Flight Test Report

(5) Flight Manuals: GA8 Pilot's Operating Handbook and Approved Flight Manual
Report No. C01-01-01 – CAA Accepted as AIR 2778
(applicable to serial numbers GA8-00-004 to GA8-03-025)

GA8 Pilot's Operating Handbook and Approved Flight Manual
Report No. C01-01-03 – CAA Accepted as AIR 2837
(S/N GA8-03-026 and up and aircraft with SB-GA8-2003-04)

Note: Flight Manual Supplement GA8-04-81 can be used for aircraft
incorporating SB-GA8-2009-62.

GA8-TC 320 Pilot's Operating Handbook and Approved Flight
Manual – Document No. C01-01-08 – CAA Accepted as AIR 3102

GA8-TC 320 Pilot's Operating Handbook and Approved Flight
Manual – Document No. C01-01-10 – CAA Accepted as AIR 3235

GA8 Pilot's Operating Handbook and Approved Flight Manual
Report No. C01-01-07 – CAA Accepted as AIR 3372
(applicable to aircraft incorporating SB-GA8-2005-10)

(6) Operating Data for Aircraft:

(i) *Maintenance Manual:*

Gippsland Aeronautics GA8 Service Manual – Report No. C01-00-01
(applicable to serial numbers GA8-00-004 to GA8-03-025.)

Gippsland Aeronautics GA8 Service Manual – Report No. C01-00-03
(applicable to serial numbers GA8-03-026 and up.)

Gippsland Aeronautics GA8-TC 320 Service Manual – Report No. C01-00-05

(ii) *Current service Information:*

Service Bulletins and Service Letters

SB-GA8-2003-04 – Conversion of aircraft from CASA certificated FAR23
Amendment 45/48 status to CASA certificated FAR23 Amendment 54 status

SB-GA8-2005-10 – Conversion from ICAO Annex 16 noise compliance (2500
RPM, full throttle take off power) to FAR 36 noise compliance (2700 RPM, full
throttle take off power)

SB-GA8-2009-62 – Alternative three blade propeller installation

(iii) *Illustrated Parts Catalogue:*

GA8 Airvan IPC – Report No.C01-02-01

(7) Agreement from manufacturer to supply updates of data in (4), (5) and (6):

CAA 2171 form from Manager Engineering and Certification dated 16 May 2002
CAA 2171 (GA8-TC 320) from Technical Records & Services Manager 10-08-09
CAA 2171 from GippsAero Pty Ltd Technical Writer dated 15 August 2012

(8) Other information:

Technical Report GA8 – General Specifications Report C14-00-01 – Issue B

5. New Zealand Operational Rule Compliance

Compliance with the retrospective airworthiness requirements of NZCAR Part 26 is a prerequisite for the grant of a type acceptance certificate.

Civil Aviation Rules Part 26

Subpart B - Additional Airworthiness Requirements

Appendix B - All Aircraft

PARA:	REQUIREMENT:	MEANS OF COMPLIANCE:
B.1	Marking of Doors and Emergency Exits	Complies – See Flight Manual placards Section 2
B.2	Crew Protection Requirements – CAM 8 Appdx. B # .35	N/A – Agricultural aircraft only

Compliance with the following additional NZ operating requirements has been reviewed and were found to be covered by either the original certification requirements or the basic build standard of the aircraft, except as noted:

Civil Aviation Rules Part 91

Subpart F - Instrument and Equipment Requirements

PARA:	REQUIREMENT:	MEANS OF COMPLIANCE:
91.505	Shoulder Harness if Aerobatic; >10 pax; Flight Training	Both front seats are fitted with four point restraint harness assemblies to comply with FAA crashworthiness requirements
91.507	Pax Information Signs - Smoking, safety belts fastened	N/A – Less than 10 passenger seats
91.509 Min. VFR	(1) ASI FAR §23.1303(a) Fitted as Std * (2) Machmeter N/A – No Mach-dependent limitations (3) Altimeter FAR §23.1303(b) Fitted as Std * (4) Magnetic Compass FAR §23.1303(c) Fitted as Std * (5) Fuel Contents FAR §23.1305(a) 2 Fitted as Std * (6) Engine RPM FAR §23.1305(d)(e) Fitted as Std * (7) Oil Pressure FAR §23.1305(b) Fitted as Std *	(8) Coolant Temp N/A – Air-cooled engine (9) Oil Temperature FAR §23.1305(c) Fitted as Std * (10) Manifold Pressure Fitted as Standard * (11) Cylinder Head Temp. ** (12) Flap Position FAR §23.699(a)(2) *** (13) U/c Position N/A – Fixed undercarriage (14) Ammeter/Voltmeter FAR §23.1351(d) – Ammeter fitted
	* See Flight Manual Table 2-11: Operation Equipment List ** Not mentioned in the Flight Manual, although Gippsland stated one is fitted as standard. *** Flap handle acts as the indicator in conjunction with placards. (It is direct-acting and provides a sense of “feel” and position.)	
91.511 Night	(1) Turn and Slip Optional Equipment * (2) Position Lights Optional Equipment *	(3) Anti-collision Lights FAR §23.1401 – Fitted as Std * (4) Instrument Lighting Optional Equipment *
91.517 IFR	(1) Gyroscopic AH Optional Equipment * (2) Gyroscopic DI Optional Equipment * (3) Gyro Power Supply FAR §23.1331(a)(3) (if fitted) (4) Sensitive Altimeter Fitted as Std – See FM Fig. 7-1	(5) OAT Optional Equipment * (6) Time in hr/min/sec Optional Equipment * (7) ASI/Heated Pitot Fitted as std – See FM §7.18 (8) Rate of Climb/Descent Compliance as applicable
91.519	IFR Communication and Navigation Equipment	Operational requirement – Compliance as applicable
NOTE: See Gippsland Service Bulletin SB-GA8-2003-08 for a summary of additional equipment required for IFR operations.		
91.523	Emergency Equipment: (a) More Than 10 pax – First Aid Kits per Table 7 – Fire Extinguishers per Table 8 (b) More than 20 pax – Axe readily acceptable to crew (c) More than 61 pax – Portable Megaphones per Table 9	Operational requirement – Compliance as applicable Operational requirement – Compliance as applicable N/A – Less than 20 passenger seats N/A – Less than 61 passenger seats
91.529	ELT – TSO C126 after 1/7/2008	To be determined on an individual aircraft basis
91.531	Oxygen Indicators - Volume/Pressure/Delivery	Not fitted as standard
91.533	Supplemental Oxygen for Non-pressurised Aircraft >30 min above FL100 – Supplemental for crew, 10% Pax – Therapeutic for 3% of Pax Above FL100 – Supplemental, Therapeutic, 1201 PBE	Maximum operating altitude in Flight Manual is 20,000 ft Oxygen system not fitted as standard No Flight Manual Supplement in Flight Manual
91.541	SSR Transponder and Altitude Reporting Equipment	Operational requirement – Compliance as applicable
91.543	Altitude Alerting Device – Turbojet or Turbofan	N/A – Not turbo jet or turbofan powered
91.545	Assigned Altitude Indicator	Operational requirement – Compliance as applicable
A.15	ELT Installation Requirements	To be determined on an individual aircraft basis

Civil Aviation Rules Part 135

Subpart F - Instrument and Equipment Requirements

PARA:	REQUIREMENT:	MEANS OF COMPLIANCE:
135.355	Seating and Restraints – Shoulder harness for flight-crew seats	FAR §23.785 (Required under §23.562)
135.357	Additional Instruments (Powerplant and Propeller)	FAR §23.1305
135.359	Night Flight	<i>Operational requirement – Compliance as applicable</i>
135.361	IFR Operations	<i>Operational requirement – Compliance as applicable</i>
135.363	Emergency Equipment (Part 91.523 (a) and (b))	<i>Operational requirement – Compliance as applicable</i>
135.367	Cockpit Voice Recorder	N/A – Only applicable to helicopters
135.369	Flight Data Recorder	N/A – Less than 10 passenger seats
135.371	Additional Attitude Indicator	N/A – Not turbo jet or turbofan powered

NOTES: 1. A Design Rule reference in the Means of Compliance column indicates the Design Rule was directly equivalent to the CAR requirement, and compliance is achieved for the basic aircraft type design by certification against the original Design Rule.

2. The CAR Compliance Tables above were correct at the time of issue of the Type Acceptance Report. The Rules may have changed since that date and should be checked individually.

3. Some means of compliance above are specific to a particular model/configuration. Compliance with Part 91/119 operating requirements should be checked in each case, particularly oxygen system capacity and emergency equipment.

Attachments

The following documents form attachments to this report:

Three-view Drawing Gippsland Aeronautics Model GA8 Airvan
 Copy of CASA Type Certificate/ Type Certificate Data Sheet VA503
 Copy of Gippsland Service Bulletin SB-GA8-2003-08

Sign off

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 David Gill
 Team Leader Airworthiness

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 Checked – Craig Bamber
 Airworthiness Engineer

Appendix 1

List of Type Accepted Variants:

<i>Model:</i>	<i>Applicant:</i>	<i>CAA Work Request:</i>	<i>Date Granted:</i>
GA8 (s/n 004-025)	Gippsland Aeronautics Pty Ltd	2/21B/15	29 May 2002
GA8 (s/n 026 up)	Gippsland Aeronautics Pty Ltd	4/21B/6	10 September 2003
GA8 (IFR)	Gippsland Aeronautics Pty Ltd	4/21B/12	26 November 2003
GA8-TC 320	Gippsland Aeronautics Pty Ltd	10/21B/3	3 September 2009
GA8 Series IGW	GippsAero Pty Ltd	13/21B/5	18 October 2012
GA8 (2700 RPM)	Southern Alps Air Ltd	17/21B/8	25 October 2016