
Type Acceptance Report

TAR 99/21 – Revision 1

Schempp-Hirth Ventus Series

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Executive Summary

New Zealand Type Acceptance has been granted to the Schempp-Hirth Ventus Series based on validation of LBA Type Certificate number 349. 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).

1. Introduction

This report details the basis on which Type Acceptance Certificate No.99/21 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.

The report also notes the status of all models included under the foreign type certificate which have been granted type acceptance in New Zealand. Models covered by the type acceptance certificate issued under Part 21B are listed in Section 2 of this report. Models which were accepted prior to that under NZCAR Section B.9 are listed in Appendix 1.

2. ICAO Type Certificate Details

Manufacturer:	Schempp-Hirth Flugzeugbau GmbH
Type Certificate:	Musterzulassungsschein Nr. 349
Issued by:	Luftfahrt-Bundesamt, Bundesrepublik Deutschland
Model:	Ventus-2a and Ventus-2b
MCTOW	525 kg [1157 lb.]
Max. No. of Seats:	1

Model:	Ventus-2c
MCTOW	500 kg [1102 lb.] – 18m span 525 kg [1157 lb.] – 15m and 18m span with TN 349-21 embodied 565 kg [1246 lb.] – 18m S/N 82 and up with MB 349-46 embodied 600 kg [1322 lb.] – 18m span with TN 349-32 embodied
Max. No. of Seats:	1

3. Type Acceptance Details

The application for New Zealand type acceptance of the Ventus-2b was from the owner, Mr D N Speight, dated 10 December 1998. The first-of-type example was serial number 76 registered ZK-GQT.

Type Acceptance Certificate Number 99/21 was granted on 22 December 1998 to the Schempp-Hirth Models Ventus-2a/2b based on validation of LBA Type Certificate 349. Specific applicability is limited to the coverage provided by the operating documentation supplied. There are no special requirements for import into New Zealand.

This Report was raised to Revision 1 to include the Ventus-2c. The application was from the NZ agent, Sailplane Services Ltd, dated 7 October 2008. The first-of-type example was serial number 76 registered ZK-GYD. The Ventus-2c is a single-seat mid-wing all-composite glider with provision for water ballast and a T-tail, designed for the 18m competition class. It can also be flown in the 15m with flaps class, with optional 15m-span outer panels. Type Acceptance was granted on 5 December 2008.

The Ventus-2 Series (-2a/b/c) is a development of the successful Ventus c racing sailplane. Changes include a revised airfoil section and wing plan with sweptback and upturned wing tips. The all-composite wing is a glass/carbonfibre/foam sandwich with carbonfibre-roving spar caps. Turbulator tape is used for boundary layer control. The initial two variants offered (Ventus-2a and -2b) differ only in the fuselage shape. The Ventus-2b has a standard size fuselage while the -2a has a smaller fuselage available only to special order, which is only suitable for persons of smaller stature (less than 170 cm). It has slightly less surface area and hence drag for optimised performance in competition use. The Ventus-2c is the current production model and is available in either 15 or 18 metre wingspan. The variant identified with the salescode Ventus-2c(x) is applicable to serial number 82 and on with Modification Bulletin 349-46 embodied. This employs among other things a new horizontal tail and the use of modified 18m outboard wing panels.

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, or were already held by the CAA:

(1) ICAO Type certificate:

Musterzulassungsschein Nr.: 349 – Ventus-2b – date of Issue 26 Jan. 1996
 Type Certificate Data Sheet No. 349 – Ventus-2b – Issue 1, dated 26.01.1996
 Type Certificate Data Sheet No. 349 – Ventus-2c – Issue 4, dated 16.11.2004

(2) Airworthiness design requirements:

(i) *Airworthiness Design Standards:*

The certification basis of the Schempp-Hirth Model Ventus-2 Series is the Joint Airworthiness Requirements for Sailplanes and Powered Sailplanes (JAR 22) effective on June 27th, 1989 (Change 4 of the English Original Issue), including Amendment 22/90/1. This is an acceptable certification basis in accordance with NZCAR Part 21B Para §21.41 and Appendix C, as JAR-22 is the basic standard for sailplanes listed in Advisory Circular 21-2B. There are no non-compliances and no additional special conditions have been prescribed by the Director under §21.23. The Ventus-2 Series is approved for Day-VFR flying.

(ii) *Special Conditions:*

Standards for structural substantiation of sailplanes and powered sailplane components consisting of glass or carbon fiber reinforced plastic, Edition of July 1991.

Additional requirements for the installation of a water ballast system into the fin (for compensating the nose-heavy moment of water ballast in wing tanks). LBA-Reference I4 – I 413/89 dated October 25, 1989.

Draft NPA 22 D-46 dated April 7, 1994 – JAR 22.785(e)(f) “Seat & Restraint System”.

Draft NPA 22 D-64 dated April 12, 1994 relating to JAR 22.788 “Head Rests”.

(iii) *Equivalent Level of Safety Findings:*

JAR 22.207(c) Stall Warning – In the aft c.g. condition the stall warning occurs at a speed higher than $1.1 V_{si}$, but this was accepted because IAS values drop quickly to lower values and give the pilot very good information about the impending stall.

(iv) *Airworthiness Limitations:*

See Maintenance Manual Section 3.3 Special Inspections.

(3) Environmental Certification:

Not Applicable

(4) Certification Compliance Listing:

Nachweisliste (Mz) Compliance Checklist TC Nr.349 Ventus-2a/b – dated 15.12.95

Nachweisliste (Mz) Compliance Checklist TC Nr.349 Ventus-2c – dated 9.8.96

Nachweisliste (Mz) Compliance Checklist Tech. Note No.349-21 dated 16.09.97

Nachweisliste (Mz) Compliance Checklist Mod. Bulletin No.349-46 dated 30.07.04

Nachweisliste (Mz) Compliance Checklist Mod. Bulletin No.349-49 dated 14.01.05
Nachweisliste (Mz) Compliance Checklist Tech. Note No.349-32 dated 15.05.06
Nachweisliste (Mz) Compliance Checklist Mod. Bulletin No.349-54 dated 08.11.07

- (5) Flight Manual: LBA-Approved Flight Manual for Sailplane Ventus-2a and Ventus-2b
Issued August 1995 – CAA Accepted as AIR 2646

LBA-Approved Flight Manual for Sailplane Ventus-2c – Issued
November 1995 – CAA Accepted as AIR 3078

LBA-Approved Flight Manual for Sailplane Ventus-2c
(Ventus-2c(x) S/N 82 and on when in compliance with MB-No.349-46)
Issued November 2003 – CAA Accepted as AIR 3076

- (6) Operating Data for Aircraft:

(i) *Maintenance Manual:*

Maintenance Manual for Sailplanes Ventus-2a and Ventus-2b

Maintenance Manual for Sailplanes Ventus-2c – Issue June 1996
(Includes Repair Instructions)

Maintenance Manual for Sailplane Model Ventus-2c – Issue November 2003
(Ventus-2c(x) S/N 82 and on when in compliance with MB-No.349-46)

(ii) *Current service Information:*

Technical Notes and Modification Bulletins

(iii) *Illustrated Parts Catalogue:*

Not Applicable – None issued.

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

CAA 2171 from Schempp-Hirth Chief Technical Department dated 21.12.1998

CAA 2171 from Schempp-Hirth Head of Technical Office dated 10.10.2008

5. Additional New Zealand Requirements

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	<i>To be determined on an individual aircraft basis</i>
B.2	Crew Protection Requirements – CAM 8 Appdx. B # .35	Not Applicable – 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	JAR 22.1307 - Fitted as Std – See Maintenance Manual §7.1
91.507	Pax Information Signs - Smoking, safety belts fastened	Not Applicable – Single-seat glider
91.509	Minimum Instruments and Equipment	Not Applicable – Powered aircraft only
91.511	Night VFR Instruments and Equipment	Not Applicable – Certificated for Day VFR flight only
91.513	VFR Communication Equipment	<i>Operational requirement – compliance as applicable</i>
91.517	IFR Instruments and Equipment	Not Applicable – Certificated for Day VFR flight only
91.519	IFR Communication and Navigation Equipment	Not Applicable – Certificated for Day VFR flight only
91.523	Emergency Equipment	N/A – Single-seat glider [Superseded by §104.101(5)]
91.529	ELT - TSO C91a after 1/4/97 (or replacement) Appendix A.15 – Installation Requirements	<i>To be determined on an individual aircraft basis</i> Flight Manual Section 7.13 addresses a suitable location
91.531	Oxygen Indicators - Volume/Pressure/Delivery	Factory oxygen system available – See Flight Manual §7.13
91.533	Oxygen for Non-Pressurised Aircraft For flight >30 min above FL100 – Supplemental for crew	<i>Operational requirement – compliance as applicable</i>
91.541	SSR Transponder and Altitude Reporting Equipment	<i>Operational requirement – compliance as applicable</i>
91.543	Altitude Alerting Device - Turbojet or Turbofan	Not Applicable – Certificated for Day VFR flight only
91.545	Assigned Altitude Indicator	Not Applicable – Certificated for Day VFR flight only
A.15	ELT Installation Requirements	<i>To be determined on an individual aircraft basis</i>

Civil Aviation Rules Part 104

Subpart C - Equipment and Maintenance Requirements

PARA:	REQUIREMENT:	MEANS OF COMPLIANCE:
104.101	(1) Airspeed Indicator (2) Altimeter (Adjustable for barometric pressure) (3) Magnetic Compass (4) Safety Harness for each seat (5) A First Aid Kit (6) For powered gliders (1) For IMC – (i) A variometer (ii) Turn & Slip/Artificial Horizon (iii) Radio transceiver	Required as Minimum Equipment – See TCDS Section #III.7 Required as Minimum Equipment – See TCDS Section #III.7 Optional Equipment – See MM §7.2(b) [Required for cloud flying] Required as Minimum Equipment – See TCDS Section #III.7 <i>Operational requirement – compliance as applicable N/A</i> Not Applicable } Required for IMC Flight * * All available as Additional Equipment per the MM §7.2(b)

Attachments

The following documents form attachments to this report:

Three-view drawing/Specification sheet Ventus-2c
Copy of LBA Type Certificate Data Sheet Number 349

Sign off

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David Gill
Team Leader Airworthiness

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Checked – AWE Chris Thomson
Airworthiness Engineer

Appendix 1

List of Type Accepted Variants:

<i>Model:</i>	<i>Applicant:</i>	<i>CAA Work Request:</i>	<i>Date Granted:</i>
Ventus a/b/c	AC 21-1.2/NZCAR Part 21 Appendix A(c)		
Ventus b/16.6	AC 21-1.2/NZCAR Part 21 Appendix A(c)		
Ventus-2a/b	D N Speight	99/21B/21	22 December 1998
Ventus-2c	Sailplane Services Limited	9/21B/7	5 December 2008