Type Acceptance Report

TAR 2/21B/7 – Revision 1

Rolladen-Schneider LS4 Series

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Executive Summary

New Zealand Type Acceptance has been granted to the Rolladen Schneider LS4 Series glider based on validation of EASA Type Certificate number A.095. 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(b).

1. Introduction

This report details the basis on which Type Acceptance Certificate No. 2/21B/7 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:	Rolladen-Schneider Flugzeugbau GmbH
TC Holder:	AMS – Flight, d.o.o.
Type Certificate:	A.095
Issued by:	European Aviation Safety Agency
Model(s):	LS4, LS4-a, LS4-b
MCTOW:	470 kg (1036 lb) – LS4 (with water ballast) 525 kg (1157 lb) – LS4-a/b (with water ballast)

3. Type Acceptance Certificate

The application for NZ type acceptance of the Model LS4-b was from the importer, Drake Aviation Ltd dated 30th November 2001. The first-of-type was a new production example s/n 1043, registered ZK-GCC. The LS4 is a single seat all-composite shoulder-wing glider.

Type Acceptance Certificate No.2/21B/7 was granted on 6 December 2001 to the Rolladen Schneider Model LS4-b based on validation of LBA type certificate number 345. There are no special conditions for import.

This report was raised to Revision 1 to include the LS4-a, and also to record transfer of State-of-Design responsibilities to EASA. The application was from the local agent dated 1 December 2006 and the first-of-type example was serial number 4301 registered ZK-GYH.

The LS4 Standard Class glider, which has been in production since 1980, is a very popular 15m span competition training machine. The LS4 was type accepted in NZ in 1981 and the first example was serial number 38, registered ZK-GMI on 27 October 1981. The LS4-a version is identical except for an additional rubber spring on the monowheel and larger water ballast tanks in each wing. The LS4 can be converted to the LS4-a by embodiment of Technical Bulletin 4018a. The latest Model LS4-b changes include provision for a nose towhook, automatic wing pick-up connections and an optional fin ballast tank.

4. Type Data

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) Type certificate:

EASA Type Certificate Data Sheet number A.095 at Issue 1 dated 18 July 2006
- Model LS4 LBA approved 17 December 1980
- Model LS4-a LBA approved 31 May 1983
- Model LS4-b LBA approved 31 August 1992

LBA Sailplane TCDS No.345 at Edition 3 dated 28 April 1999 (superseded)
FAA TCDS No. G45EU at Revision 2 dated January 15, 1985

(2) Airworthiness design requirements:

The certification basis of the LS4 was the German Airworthiness Requirements for Sailplanes and Powered Sailplanes (LFSM) Issue 1975 plus the Guidelines for the stress analysis of glass-fibre reinforced plastic structures for sailplanes, issued March 1975. For the LS4-a this was changed to the Joint Airworthiness Requirements for Sailplanes and Powered Sailplanes (JAR22) Change 2, September 1982, plus the Preliminary Standards for Structural Substantiation of Glass and Carbon Fibre Reinforced Plastic Components for Sailplanes and Powered Sailplanes, January 1981. For the LS4-b this was updated to the Joint Airworthiness Requirements JAR-22, Sailplanes and Powered Sailplanes, Amendment Change 3 of the English original Edition dated 15 December 1982. Additional requirements were the LBA Standards for the Structural Substantiation of Sailplane Parts consisting of Glas- and Carbon-fiber

Reinforced Plastics. Edition, May 1986; and Supplemental LBA-Requirements for the use of vertical fin water ballast systems dated 25.10.89 (Ref.I4-413/89), for compensation of nose-heavy moment due to mass of pilot and wing water ballast.

This is an acceptable certification basis in accordance with NZCAR Part 21B Para §21.41, as JAR 22 is the basic standard for sailplanes called up in Advisory Circular 21-1b. (LFSM is accepted as being the predecessor of JAR22.) There are no non-compliances and no special conditions have been prescribed by the Director under §21.23. The LS4 Series is approved for VFR-flying in daytime, and cloud flying.

(3) Environmental Certification:

Not applicable

(4) Certification compliance listing:

MZ-Liste Betriebsverhalten – LS4 dated 1.12.80

Summary of Certification Data Reports – LS4-b dated 06.Jul.92

JAR-Certification Compliance Checklist – LS4-b dated 01.Feb.92

(5) Flight manual: Flight Manual for the *LS4-b* Sailplane – LBA-Approved 08 Okt. 92
Note: Only applicable to aircraft without a tail fin water ballast tank. (Optional installation per TB 4034) – CAA Accepted as AIR 2763

LBA-Approved Flight Manual LS4-a – CAA Accepted as AIR 2987

(6) Illustrated Parts Catalogue: None available

(7) Maintenance manual and service data:

Maintenance Manual LS4-a – Published 15 Nov 83

Maintenance Manual for the *LS4-b* Sailplane – Published Apr 15, 1992

(8) Agreement from manufacturer to supply updates of data in (5) and (7):

CAA 2171 from Type Certification Engineer Günter Schapka dated 05.12.2001

Email from ams-flight Accountable & Design Manager dated 28 June 2007

(9) Other information:

Technical Bulletin TM4013 – Retractable Landing Gear Third Rubber Element

Technical Bulletin TM4014 – Water ballast System Installation LS4-a

Technical Bulletin TM4018a – Modification of LS4 to LS4-a

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	***To be determined on an individual aircraft basis***
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	Four piece seat belt harness fitted – *See Flight Manual §2.10*
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	***Operational requirement – compliance as applicable***
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)	***Operational requirement – compliance as applicable***
91.531	Oxygen Indicators - Volume/Pressure/Delivery	***Operational requirement – compliance as applicable***
91.533	Oxygen for Non-Pressurised Aircraft (required for >30 min above FL100)	***Operational requirement – compliance as applicable*** [Factory oxygen system is an optional fit – *See Flight Manual §7.8.2*]
91.541	SSR Transponder and Altitude Reporting Equipment	Terra TRT250D available as factory optional equipment
91.543	Altitude Alerting Device - Turbojet or Turbofan	Not Applicable – Glider
91.545	Assigned Altitude Indicator	Not Applicable – Certificated for Day VFR flight only
A.15	ELT Installation Requirements	ACK E-01 available as factory option – *See Flight Manual §7.8.3*

Civil Aviation Rules Part 104

Subpart C - Equipment and Maintenance Requirements

PARA:	REQUIREMENT:	MEANS OF COMPLIANCE:
104.101	(1) Airspeed Indicator	Fitted as Standard – See MM Master Equipment List 12-1-1 [Winter 6 FMS 4-2 or any ASI approved under TSO C2]
	(2) Altimeter (Adjustable for barometric pressure)	Fitted as Standard – See MM Master Equipment List 12-1-2 [Winter 4 FGH 10 or any altimeter approved under TSO C10]
	(3) Magnetic Compass	Fitted as Standard – See MM Master Equipment List 12-1-3 [Airpath C 2400 or any compass Approved under TSO C7 #4
	(4) Safety Harness for each seat	Fitted as Standard – See MM Master Equipment List 12-1-4
	(5) A First Aid Kit	***To be determined on an individual aircraft basis***
	(6) For powered gliders	Not Applicable
	(7) For IMC - (i) A variometer (ii) Turn & Slip/Artificial Horizon (iii) Radio transceiver	⎧ Optional equipment – See MM §12-2-5 ⎪ Optional equipment – See MM §12-2-5 ⎩ Optional equipment – See MM §12-2-5 Walter Dittel FSG Series or Becker AR x000 standard options

Note: FM and MM references in the tables above are applicable to the LS4-b manuals.

Attachments

The following documents form attachments to this report:

Photographs first-of-type example serial number 41043 ZK-GCC
Three-view drawing Rolladen-Schneider Model LS4-b
Copy of EASA Type Certificate Data Sheet Number A.095

Sign off

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David Gill	Checked – AWE Chris Thomson
Team Leader Airworthiness	Date: 12 September 2007

Appendix 1

List of Type Accepted Variants:

Model:	*Applicant:*	*CAA Work Request:*	*Date Granted:*
LS4	AC 21-1.2/NZCAR Part 21 Appendix A(c)		
LS4-b (with TB 4034)	Drake Aviation Limited	2/21B/17	6 December 2001
LS4-a	P J Buchanan	7/21B/23	11 July 2007