
Type Acceptance Report

TAR 3/21B/14 – Revision 2

Rolladen-Schneider LS6 Series

TABLE OF CONTENTS

EXECUTIVE SUMMARY	1
1. INTRODUCTION	1
2. FOREIGN TYPE CERTIFICATE DETAILS	1
3. TYPE ACCEPTANCE CERTIFICATE	1
4. TYPE DATA	3
5. ADDITIONAL NEW ZEALAND REQUIREMENTS	5
ATTACHMENTS	6
APPENDIX 1	6

Executive Summary

New Zealand Type Acceptance has been granted to the Rolladen-Schneider LS6 Series sailplanes based on validation of LBA Type Certificate number 357. 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(2).

1. Introduction

This report details the basis on which Type Acceptance Certificate No.3/21B/14 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. Foreign Type Certificate Details

Type Certificate: Musterzulassungsschein Nr. 357

Issued by: Luftfahrt-Bundesamt, Bundesrepublik Deutschland

Manufacturer: Rolladen-Schneider Flugzeugbau GmbH

Model: LS6-a, LS6-b, LS6-c, LS6-18w

MCTOW: 525 kg (1157 lb)

3. Type Acceptance Certificate

The original application for New Zealand type acceptance dated 29th October 2002 was from the owner of the first imported example, LS6-a serial no. 6008 registered as ZK-GZI. The LS6 is an all-composite single-seat 15m class high performance glider with flaps.

Type Acceptance Certificate No.3/21B/14 was granted to the LS6 on 4 November 2002, based on validation of LBA Type Certificate number 357. Specific applicability is limited

to the coverage provided by the operating data supplied. There are no special requirements for import into New Zealand.

This report was raised to Revision 1 to include another variant and update the report to the latest format, under CAA Work Request 4/21B/17, after application from the importer. This was granted on 23 February 2004. The first-of-type example of the LS6-c was s/n 6201 registered ZK-GIE. The report also retrospectively added the model LS6-18w, which was previously covered by Type Acceptance Note No. 96/14. (The first-of-type example was s/n 6342 registered ZK-GSX.)

The report was raised to Revision 2 to include the LS6-b under Work Request 6/21B/9. The first-of-type example was serial number 6619 registered ZK-GVS.

The LS6-a is a variant of the original LS6 glider, which introduces provision for a water ballast tank in the vertical fin. The modification can be added retrospectively to the LS6 by embodiment of Technical Bulletin TB6005. The LS6 is available in 15 and 18m wing spans. These original versions had carbon spars and glass-fibre wings shells. The LS6 and LS6-a models showed flaperon flutter after about 100 were flying, and a switchable damper system was included into the fuselage (damper switched by flap actuation, no damping during thermal flight). 127 units of the LS6/LS6-a were built. The next version was the LS6-b, which had carbon fibre wing skins, high mass flaperon system "damper" in the wings, and optional tail fin tank. 61 units were built. The final version was the LS6-c, available in 15m and 17.5m wing spans (no winglets), which was completely modified structurally, based on extensive testing. The wing structure is totally carbon fibre, with an optional tail fin tank, wing-fuselage control system connection by automatic connectors, and the flaperon extended into the 17.5m tip. There are no flap restrictions with wing-span variation. There are two extended-span models: The LS6-18w, which has a twin water bag system per wing with a total capacity of 170 litres. It is available in 15m and 18m wing spans, both versions include optional winglets. The LS6-c18 has a smaller single water bag per wing, with a total capacity of 104 litres. In the 15m version no winglet is fitted, but the 18m version has winglets. Any LS6-c can be upgraded to one of the 18m version models. (See Technical Bulletins TB6029 to TB6032.) 187 examples of the LS6-c/LS6-c18/LS6-18w have been built. Note the 18m span LS6 has lower maximum moment limits for the inner and outer flaperon parts than the LS6-c. Therefore, depending on serial number it may be necessary to exchange single items. This has to be checked before any conversion work is started. (Either via control surface weight/moment report of the final production inspection or details from the factory technical data collection).

4. Type Data

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

(1) Type certificate:

Type Certificate Data Sheet 357 – Version LS6-a/b – Edition 3 dated 23 Sep. 87
 Type Certificate Data Sheet 357 – Version LS6-c – Edition 2 dated 22.08.2001
 Type Certificate Data Sheet 357 – Version LS6-18w – Edition 1 dated 31.Jan.95

(2) Airworthiness design requirements:

The certification basis of the LS6-a/b is the Joint Airworthiness Requirements JAR-22 (Change 2 of Original Edition in English Language) plus the Provisional guidelines for proof of strength of parts made from glass fiber and carbon-fiber reinforced plastics for sailplanes, Edition January 1981. For the LS6-18w and LS6-c this was upgraded to JAR-22 Change 4 of English original Edition. Supplemental LBA-requirements were added for the use of vertical tail fin water ballast systems dated 25.10.89 (Ref.14-413/89). The LS6 Series is certificated in the U (Utility) category.

This is an acceptable certification basis in accordance with NZCAR Part 21B Para §21.41, because JAR 22 is the basic airworthiness standard for sailplanes called up in Advisory Circular 21-2a. There are no non-compliances and no special conditions have been prescribed by the Director under §21.23. The LS6 is approved for Day VFR operations, and for “*cloud flying according to data specified in the Flight Manual*”. However the Flight Manual does not mention or make provision for this.

(3) Certification compliance listing:

JAR-22 Certification Compliance Checklist – LS6 – dated 15 September 1984
 JAR-Certification Compliance Checklist – LS 6-a – dated 09.Feb.88
 JAR-Certification Compliance Checklist – LS 6-b – dated 16.Sep.87
 JAR-Certification Compliance Checklist – LS 6-c – dated 01.Nov.90

(4) Environmental Certification:

Not Applicable

(5) Flight manual: LBA-Approved Flight Manual LS6-18w published Mar.30, 1994
 CAA Accepted as AIR 2569

LBA-Approved Flight Manual LS6-a published 7 Okt. 1986
 CAA Accepted as AIR 2807

LBA-Approved Flight Manual LS6-b published 30 Okt. 1987
 CAA Accepted as AIR 2932

LBA-Approved Flight Manual for the LS6-c Sailplane – published
 November 30, 1990 – CAA Accepted as AIR 2857

(6) Illustrated Parts Catalogue: Not issued separately

(7) Maintenance manual and service data:

Maintenance Manual for LS6-18w Sailplane – Published Mar. 30, 1994

Instructions for Continued Airworthiness – LS6-a – dated 10 Jan. 1987

Instructions for Continued Airworthiness – LS6-b – dated 30 Okt. 1987

Maintenance Manual for LS6-c Sailplane – Published November 30, 1990

(8) Agreement from manufacturer to supply updates of data in (4) and (6):

CAA2171 from Rolladen-Schneider Managing Director – 20.Sep.95 (LS6-18w)

Letter from Rolladen-Schneider Flugzeugbau GmbH dated 20.Aug.2002. (LS6-a)

All publications are now available on their website at www.dg-flugzeugbau.de

(9) Other information: TB-AD-Accomplishment List LS6/LS6-a

TB-AD-Accomplishment List LS6-b

TB-AD-Accomplishment List LS6-c

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	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	<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)	<i>Operational requirement – compliance as applicable</i>
91.531	Oxygen Indicators - Volume/Pressure/Delivery	<i>Operational requirement – compliance as applicable</i>
91.533	Oxygen for Non-Pressurised Aircraft (required for >30 min above FL100)	<i>Operational requirement – compliance as applicable</i> [Fuselage has a fibreglass receptacle provision for 3 liter oxygen bottles of 100 mm in diameter. – See FM §7.1]
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 – Glider
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 (7) For IMC - (i) A variometer (ii) Turn & Slip/Artificial Horizon (iii) Radio transceiver	Fitted as Standard – See FM §9.6 Master Equipment List #1 [Winter 6 FMS 4-2 or any ASI approved under TSO C2] Fitted as Standard – See FM §9.6 Master Equipment List #2 [Winter 4 FGH 10 or any altimeter approved under TSO C10] Fitted as Standard – See FM §9.6 Master Equipment List #3 [Airpath C 2400 or any compass Approved under TSO C7 #4 Fitted as Std – FM §9.6 Master Equipment List [Autoflug FAG-7H] <i>To be determined on an individual aircraft basis</i> Not Applicable Optional equipment – See Flight Manual §9.6 paragraph 5 Optional equipment – See Flight Manual §9.6 paragraph 5 See Flight Manual §9.6 paragraph 6 for approved types

Attachments

The following documents form attachments to this report:

- Photographs of first-of-type example LS6-a serial number 6008 ZK-GZI
- Three-view drawing Rolladen-Schneider Model LS 6a
- Copy of LBA Type Certificate/ Type Certificate Data Sheet 357

Sign off

.....
David Gill
Team Leader Airworthiness

.....
Checked – AWE
Date: 12 October 2005

Appendix 1

List of Type Accepted Variants:

<i>Model:</i>	<i>Applicant:</i>	<i>CAA Work Request:</i>	<i>Date Granted:</i>
LS6-18w	Importer (Mr T R Delore)	96/21H/125	1 November 1996
LS6-a	Importer (Messrs Ruddick/White)	3/21B/14	4 November 2002
LS6-c	Importer (Mr I G Evans)	4/21B/17	23 February 2004
LS6-b	Importer (Mr V J Vingerhoeds)	6/21B/9	12 October 2005