Type Acceptance Report

TAR 19/21B/19

SPORTINE AVIACIJA LAK-17 Series

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Executive Summary

New Zealand Type Acceptance has been granted to the LAK-17 Series based on validation of EASA Type Certificate number A.083. There are no special requirements for import.

NOTE: The Model LAK-17B FES is only eligible for a Restricted Category airworthiness certificate because the engine and propeller are accepted as part of the aircraft, in accordance with the provisions of CS Part 21.A.23(b)(2).

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 or Restricted Categories in accordance with NZCAR §21.191, 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 §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. 19/21B/19 was granted in the Restricted Category to the LAK-17B FES and in the Normal Category to the LAK-17A and LAK-17AT variants, 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:	JSC Sportine Aviacija ir Ko
Type Certificate:	EASA.A.083
Issued by:	European Aviation Safety Agency
Production Approval:	LT.21G.0002

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

(i) **Model:** LAK-17A

MCTOW:	500 kg [1102 lb.] 600 kg [1323 lb.] – serial number 201 and on
Max. No. of Seats:	1

(ii) **Model:** LAK-17AT

MCTOW:	500 kg [1102 lb.] 600 kg [1323 lb.] – serial number 201 and on
Noise Standard:	Not Applicable
Engine:	SOLO 2350 Type Certificate: LBA TCDS No. 4603
Propeller:	LAK-P4-90 Type Certificate: EASA.P.014

(iii) **Model:** LAK-17B FES

MCTOW:	600 kg [1323 lb.]
Noise Standard:	Not Applicable
Engine:	FES-LAK-M100 Type Certificate: Not Applicable (engine accepted as part of the aircraft)
Propeller:	LAK-P10-100 Type Certificate: Not Applicable (propeller accepted as part of the aircraft)

3. Application Details and Background Information

The application for New Zealand type acceptance of the LAK-17B FES was from the importer, Tauranga Gliding Club (Inc.) dated 25 January 2019. The first-of-type example was serial number 250, registered ZK-GFS. The LAK-17 is a single-seat all-composite sailplane with flaps, with a conventional mid-wing T-tail configuration. It has ballast tanks in the wings and tail, and is available in 15m span with winglets and 18m span versions.

Type Acceptance Certificate No. 19/21B/19 was granted on 5 July 2019 to the LAK-17 Series based on validation of EASA Type Certificate A.083. Specific applicability is limited to the coverage provided by the operating documentation supplied. There are no special requirements for import into New Zealand.

The LAK-17A is a new design of glider in the FAI 15-18m Class, and was first certificated by the Lithuanian CAA under type certificate number 03/03. The LAK-17AT is the self-sustaining version using the retractable Solo 2350 two-stroke two-cylinder air-cooled engine package. It is started by decompressing and then wind milling the engine, and has no throttle control. LAK-17B is the commercial designation for the LAK-17A aircraft serial number 201 and up, which have new wings with modified geometry and a new wing profile. Similarly the LAK-17AT serial number 201 and up is known as the LAK-17BT.

The LAK-17B FES (Front Electric Sustainer) is the version using the electric-powerplant package produced by LZ-Design in Slovenia, with the engine and folding propeller located in the nose. It uses a brushless DC synchronous permanent magnet electric motor, with an electronic controller mounted on top of the main wheel box. A one meter carbon fibre propeller automatically extends when the motor is operating. When not in use, the propeller blades fold against the nose of the sailplane.

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) State-of-Design Type certificate:

EASA Type Certificate Number A.083

EASA Type Certificate Data Sheet no. A.083 at Issue 5 dated 20 December, 2017
- Model LAK-17A approved 12 November 1999
- Model LAK-17AT approved 21 April 2006
- Model LAK-17B FES approved 31 October 2014

Annex to TCDS EASA.A.083 Issue 01 dated 20 December 2017

(2) Airworthiness design requirements:

(i) Airworthiness Design Standards:

The certification basis of the LAK-17A is the Joint Airworthiness Requirements for Sailplanes and Powered Sailplanes (JAR 22), effective 28 October 1995 (Amendment 5 of the English original version), plus CS-22, Amendment 2 published on 5 March 2009. For the LAK-17AT the JAR 22 standard was updated to JAR 22 effective August 01, 2001 (Amendment 6 of the English original version). For the LAK-17B FES the certification basis was changed to just CS22 at Amendment 2. The certification basis for all Models included the Standards for Structural Substantiation of Sailplane and Powered Sailplane Components consisting of Glass or Carbon Fiber Reinforced Plastics, issued July 1991.

This is an acceptable certification basis in accordance with NZCAR Part 21B Para §21.41, as JAR-22 and CS22 are the basic standards for Sailplanes called up under Part 21 Appendix C and Advisory Circular 21-1. There are no non-compliances and no additional special conditions have been prescribed by the Director under §21.23.

(ii) Special Conditions:

LAK-17B FES:

CRI E-101 – Installation of Electric Propulsion in Sailplanes: This specified a detailed set of additional safety requirements for electric propulsion systems using rechargeable (Li-Po) batteries as an energy storage device, under the CS22 individual paragraph headings.

CRI H-101 – Electric Engine for Powered Sailplanes: This defined the certification specifications for a non-type certificated engine as part of the aircraft as a self-sustaining sailplane. Again these were presented as additions to the CS22 individual paragraph headings.

(iii) Equivalent Level of Safety Findings:

LAK-17A (up to s/n 201):

JAR §22.49: NPA 22B-83 and NPA 22C&D-84: NPA22B-83 (dated 10-01-2002) changed the required stalling speed with full water ballast to 90 km/h with airbrakes retracted and 95 km/h extended. (The stalling speed of LAK-17A/15m is V_{SO}=92 km/h with airbrakes extended.) NPA 22C & D-84 specified changes in the max. permitted c.g. acceleration during undercarriage drop tests.

LAK-17AT (up to s/n 201):

JAR §22.207(c) Stall warning: With the engine extended the stall warning is marginal. This is addressed in the Flight Manual Section 4.5.6 with a Caution Note that the stall warning is marginal and is covered by engine vibration. An increase in approach speed is recommended.

(iv) Airworthiness Limitations:
See Maintenance Manual – Section 6: The Sailplane Life Limits

(3) Aircraft Noise and Engine Emission Standards:

None applicable

(4) Certification Compliance Listing:

LAK-17B FES Compliance Check List – Issue 1 dated April 7, 2014

(5) Flight Manual: EASA-Approved Flight Manual for the LAK-17A Sailplane (Issue No. 2) – CAA Accepted as AIR 3927

EASA-Approved Flight Manual for the Self-Sustaining Powered Sailplane LAK-17AT – CAA Accepted as AIR 3928

EASA-Approved Flight Manual for the LAK-17B Sailplane – CAA Accepted as AIR 3929

EASA-Approved Flight Manual for the Self-Sustaining Powered Sailplane LAK-17BT – CAA Accepted as AIR 3930

EASA-Approved Flight Manual for the LAK17B FES Sailplane with Front Electric Sustainer system – CAA Accepted as AIR 3931

(6) Operating Data for Aircraft, Engine and Propeller:

(i) Maintenance Manual:
Maintenance Manual for the LAK-17A Sailplane (Issue No. 2)

Maintenance Manual for the for the Self-Sustaining Powered Sailplane LAK-17AT

Maintenance Manual for the Sailplanes LAK-17B, LAK-17BT

Maintenance Manual LAK-17B FES Sailplane with Front Electric Sustainer System

FES-LAK-M100 Motor Manual
FES-LAK-P10-100 Propeller Manual
FES FCU Instrument Manual
FES Battery Pack GEN2 Manual
FES BMS Control Manual

(ii) Current service Information:
Bulletin Doc.-No. 017B FES.17.002 – Modification of FES Battery pack, Fire Warning System and Manuals

(iii) Illustrated Parts Catalogue:
Not produced

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

CAA 2171 dated 29.03.2019 from Director “Sportine Aviacija ir KO”

5. New Zealand Operational Rule Compliance

Compliance with the retrospective airworthiness requirements of NZCAR Part 26 has been assessed as they are a prerequisite for the grant of an airworthiness certificate.

CAR 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:

CAR Part 91 – Subpart F – Instrument and Equipment Requirements

PARA:	REQUIREMENT:	MEANS OF COMPLIANCE:
91.505	Shoulder Harness if Aerobatic; >10 pax; Flight Training	CS/JAR 22.1307 – Required Equipment – See TCDS §*.III.3
91.507	Pax Information Signs - Smoking, safety belts fastened	Not Applicable – Single-seat glider
91.509	Minimum Instruments and Equipment	Not Applicable – Powered glider (See under Part 104)
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 C126 (406 MHz)	***Operational requirement – compliance as applicable***
91.531	Oxygen Indicators – Volume/Pressure/Delivery	Optional factory oxygen system – See Flight Manual §7.15.1
91.533	Oxygen for Non-Pressurised Aircraft For flight >30 min above FL100 – Supplemental for crew	***Operational requirement – compliance as applicable***
91.541	SSR Transponder and Altitude Reporting Equipment	***Operational requirement – compliance as applicable***
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	***To be determined on an individual aircraft basis***

CAR Part 104 – Subpart C – Equipment and Maintenance Requirements

PARA:	REQUIREMENT:	MEANS OF COMPLIANCE:
104.101	(1) Airspeed Indicator	Required as Minimum Equipment – See TCDS Section §*.III.3
	(2) Altimeter (Adjustable for barometric pressure)	Required as Minimum Equipment – See TCDS Section §*.III.3
	(3) Magnetic Compass	Required as Minimum Equipment – See Flight Manual §2.11
	(4) Safety Harness for each seat	Required as Minimum Equipment – See TCDS Section §*.III.3
	(5) A First Aid Kit	***To be determined on an individual aircraft basis***
	(6) For powered gliders –	
	(i) Fuel gauge for each main fuel tank	Displayed by (required) FCU Instrument
	(ii) Oil Pressure Gauge or warning device	Not Applicable – Two-Stroke engine
	(iii) A tachometer or engine governor light	Displayed by (required) FCU Instrument
	(7) For IMC flight –	
	(i) A variometer	⎧ Not Applicable – Certificated for Day VFR only
	(ii) Turn & Slip/Artificial Horizon	⎩
	(iii) Radio transceiver	***Operational requirement – compliance as applicable***

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 Sportine Aviacija LAK-17BFES
Copy of EASA Type Certificate Data Sheet Number A.083

Sign off

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David Gill	Checked – Greg Baum
Team Leader Airworthiness	Team Leader Product Certification

Appendix 1

List of Type Accepted Variants:

Model:	*Applicant:*	*CAA Work Request:*	*Date Granted:*
LAK-17A, -17AT	Tauranga Gliding Club (Inc.)	19/21B/19	5 July 2019
LAK-17B FES	Tauranga Gliding Club (Inc.)	19/21B/19	5 July 2019