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# **Type Acceptance Report**

**TAR 20/21B/2**

**LINDSTRAND TECHNOLOGIES**

**HOT AIR BALLOONS**



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## Executive Summary

New Zealand Type Acceptance has been granted to the Lindstrand Technologies Hot Air Balloon Series based on validation of EASA Type Certificate number BA.26. 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 §21.191, 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 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. 20/21B/2 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 covers all models included on the State-of-Design type certificate which have been granted type acceptance in New Zealand.

## 2. Aircraft Certification Details

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

Manufacturer: Lindstrand Technologies Ltd.  
Type Certificate: BA.26  
Issued by: European Aviation Safety Agency  
Production Approval: UK.21G.2089

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

(i) **Models:** Lindstrand Series 1 \*  
Lindstrand Racer Series \*  
Lindstrand Series 2 \*  
MCTOW: \*  
Max. No. of Occupants: Not specified  
Noise Standard: Not Applicable

\* For details on the individual models within each Series, and their size, max landing mass and eligible equipment see Tables 1, 2 and 3 on the TCDS.

### 3. Application Details and Background Information

The application for New Zealand type acceptance of the Lindstrand Technologies Limited (LTL) Hot Air Balloon Series was from Sunrise Balloon Adventures Limited, dated 28 July 2019. The first-of-type example was an LTL Series 1 model 300 serial number 105, to be registered ZK-FBT.

Type Acceptance Certificate Number 20/21B/2 was granted on 29 October 2019 to the Lindstrand Technologies Ltd Hot Air Balloon Series based on validation of EASA Type Certificate BA.26. Specific applicability is limited to the coverage provided by the operating documentation supplied. There are no special requirements for import into New Zealand.

A typical Lindstrand Technologies envelope is manufactured from polyester or nylon with a network of vertical and horizontal load tapes. Lindstrand Series 1 envelopes are produced in a size range from 17,000 cu.ft. to 425,000 cu.ft. Series 1 envelopes up to 180,000 cu.ft. have 24 gores, between 210,000 cu.ft. and 310,000 cu.ft. have 28 gores and above 400,000 cu.ft. have 32 gores. The Racer Series have 24 gores and the Series 2 envelope has 16 gores. Most Lindstrand baskets are made from wickerwork, which is woven between two tubular stainless steel frames, with a marine grade plywood floor. The Lindstrand Vortech proprietary burner is made up of a vaporising coil, a liquid fire valve, a pilot light regulator with ignition system, and a pressure gauge, and operates on LPG.

The original Lindstrand Balloons Limited was established by Per Lindstrand in 1992. The company was taken over by Cameron Balloons in 2003, who continued to operate the company independently. Per Lindstrand left and started up a new company Lindstrand Technologies Limited to explore other applications for balloon technology, including aerostats. When Lindstrand Balloons Ltd ceased operations in 2015, LTL started up manufacture of hot air balloons again under a completely new type certificate.

#### 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 BA.26

EASA Type Certificate Data Sheet BA.26 at Issue 10 dated 9 July 2018  
– Hot Air Balloon approved 20 April 2016

(2) Airworthiness design requirements:

(i) *Airworthiness Design Standards:*

The certification basis of the Lindstrand Technologies Limited Hot Air Balloon is EASA CS-31HB at Amendment 1 dated 5 December 2011. This is an acceptable certification basis in accordance with NZCAR Part 21B Para §21.41, as CS-31HB is specified in Advisory Circular 21-1A as equivalent to FAR Part 31, which is the basic design standard for Manned Free Balloons 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 LTL HABMM Section 2 – Airworthiness Limitations

(3) Aircraft Noise and Engine Emission Standards:

(i) *Environmental Standard:*

Not Applicable

(4) Certification Compliance Listing:

Lindstrand Technologies Series 1 Hot Air Balloon (24 Gore Range): Type  
Certification Compliance Check List – Publication Ref: LTLHAB CCL Issue 3

(5) Flight Manual:

EASA-Approved Lindstrand Technologies Ltd Hot Air Balloon Flight Manual –  
Publication LTL HABFM – CAA Accepted as AIR 3946

Includes: Appendix 1 – Other Manufacturers' Equipment

Flight Manual Supplement No. 1 – Other Manufacturers' Envelopes

Flight Manual Supplement No. 2 – Special Shaped Envelopes



(6) Operating Data for Hot Air Balloon:

(i) *Maintenance Manual:*

Lindstrand Technologies Ltd – Hot Air Balloon Maintenance Manual – Publication  
LTL HABMM

(ii) *Current service Information:*

Service Bulletins

(iii) *Illustrated Parts Catalogue:*

Not Produced

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

CAA 2171 from Chief of the Office of Airworthiness dated 29/07/19

## 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.

### 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	Not Applicable – No doors or exits
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	Not Applicable – Balloons excluded from the requirement
91.507	Pax Information Signs - Smoking, safety belts fastened	Not Applicable – Balloons excluded from the requirement
91.509	Minimum Instruments and Equipment	Not Applicable – Unpowered aircraft
91.511	Night VFR Instruments and equipment	Not Applicable – Unpowered aircraft
91.513	VFR Communication Equipment	<i>Operational requirement – Compliance as applicable</i>
91.517	IFR Instruments and Equipment	Not Applicable – Not approved for IFR Flight
91.519	IFR Communication and Navigation Equipment	Not Applicable – Not approved for IFR Flight
91.523	Emergency Equipment	Not Applicable – No certificated seating capacity
91.529	ELT - TSO C91a after 1/4/97 (or replacement)	Not Applicable – Balloons excluded from the requirement
91.531	Oxygen Indicators - Volume/Pressure/Delivery	<i>Operational requirement – Compliance as applicable</i>
91.533	Oxygen for non-Pressurised Aircraft	<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 – Unpowered aircraft
91.545	Assigned Altitude Indicator	Not Applicable – Not approved for IFR Flight
A.15	ELT Installation Requirements	Not Applicable – Balloons excluded from the requirement

### Civil Aviation Rules Part 115

#### Subpart I — Hot Air Balloon Operations

PARA:	REQUIREMENT:	MEANS OF COMPLIANCE:
115.503	Instruments and equipment – hot air balloon (1) instruments and equipment in Part 91 Subpart F; and (2) a means of indicating altitude in feet	(1) See above. (2) <i>Operational requirement – Compliance as applicable</i>

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. See Flight Manual Section 2.1.11 Minimum Equipment for required equipment.

**Attachments**

The following documents form attachments to this report:

Copy of EASA Type Certificate Data Sheet Number BA.26

**Sign off**

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David Gill  
Team Leader Airworthiness

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Checked – Greg Baum  
Acting Team Leader Product Certification

**Appendix 1**

**List of Type Accepted Variants:**

<i>Model:</i>	<i>Applicant:</i>	<i>CAA Work Request:</i>	<i>Date Granted:</i>
Series 1, Series 2, Racer	Sunrise Balloon Adventures Ltd	20/21B/2	29 October 2019