
Type Acceptance Report

TAR 8/21B/32

BÖLKOW BO 209 MONSUN

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Executive Summary

New Zealand Type Acceptance has been granted to the Bölkow BO 209 Monsoon Series based on validation of EASA Type Certificate number LBA680. 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.8/21B/32 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. ICAO Type Certificate Details

TC Holder:	EADS Deutschland GmbH (current) Messerschmitt-Bölkow-Blohm GmbH (original)
Manufacturer:	Waggon- und Maschinenbau AG
Type Certificate:	680
Issued by:	Luftfahrt-Bundesamt
Model(s):	Bölkow BO 209 MONSUN
MCTOW	820 kg (1808 lb.) – Normal Category
Max. No. of Seats:	2
Noise Standard:	German nFL II-47/75

Engine: Lycoming AIO-320-C1B
Type Certificate: 1E12
Issued by: Federal Aviation Administration

Lycoming IO-320-D1A or -D1B
Type Certificate: 1E12
Issued by: Federal Aviation Administration

Lycoming O-320-E1C or -E1F or -E2C or -E2F
Type Certificate: E-274
Issued by: Federal Aviation Administration

Propeller: Hartzell HC-C2YL-1B/7663 A-6
Type Certificate: P-920
Issued by: Federal Aviation Administration

McCaughey 1C172/MGM 70.5-60 or -66
Type Certificate: P-910
Issued by: Federal Aviation Administration

3. Type Acceptance Details

The application for New Zealand type acceptance was from the importer Mr J A Evans, received 10 June 2008. The first-of-type example was serial no. 168, registered ZK-MON. The Bolkow BO 209 is a two-seat all-metal single-piston-engined light aeroplane.

Type Acceptance Certificate No. 8/21B/32 was granted on 28 July 2008 to the Bolkow BO 209 based on validation of EASA Type Certificate LBA 680. Specific applicability is limited to the coverage provided by the operating documentation supplied. There are no special requirements for import into New Zealand.

The BO 209 was originally developed by a project team of three Bolkow engineers in 1967 as the MHK-101, using some parts from the earlier BO 208 Junior. It features a low wing, which can be folded back completely for towing or to minimise hangarage requirements. There were five production versions of the aircraft, which use effectively three different engine/propeller combinations, all covered by the same Flight Manual: The BO 209-150 FV and RV; BO 209-160 FV and RV; and BO 209-150 FF. The first letter indicates fixed (F) or retractable (R) nosewheel; while the second letter signifies either constant-speed (V) or fixed-pitch (F) propeller. These are informal designations which do not appear on the LBA TCDS or the aircraft dataplate. (MBB advise the FAA requested different version designations.) Aircraft serial number 181 and above, except 188, are eligible for aerobatic category operations and use a different set of manuals. Previous aircraft can be upgraded to aerobatic standard in accordance with MBB Conversion Directive No.209-09200. (A separate type certificate model was the BO 209S, using the Rolls-Royce O-240 engine with longer wingtips and increased rudder area. Only a single conversion was carried out.)

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:

LBA Type Certificate Number 680

LBA Type Certificate Data Sheet 680 – Issue 9 dated April 12, 2005
– Model Bölkow BO 209 MONSUN approved April 9, 1970

(2) Airworthiness design requirements:

(i) *Airworthiness Design Standards:*

The certification basis of the BO 209 MONSUN is FAR 23 dated 18.12.1964, including Amendments 23.1 through 23.6 for Serial Numbers 101 through 130, which was updated to Amendments 23.1 through 23.9 for Serial Numbers 131 and subsequent. This is an acceptable certification basis in accordance with NZCAR Part 21B Para §21.41 and Advisory Circular 21-1A, as FAR 23 is the basic standard for Normal Category Airplanes 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:*

Nil (See AD 86-255/2 MBB for required eddy current inspections.)

(3) Aircraft Noise and Engine Emission Standards:

(i) *Environmental Standard:*

Three configurations of BO 209 have been shown to meet the noise requirements of the German Standard NfL II-47/75 dated 17.7.1975 (See noise reports below.)

(ii) *Compliance Listing:*

Lärmmessungen nach der Bekanntmachung des Luftfahrt-Bundesamtes (LBA) –
Bo 209-160 (Hartzell variable-pitch propeller): 70.5 dB(A)
Bo 209 (150 hp, Hartzell variable pitch propeller): 70.0 dB(A)
Bo 209 (150hp fixed pitch McCauley propeller): 73.1 dB(A)

(4) Certification Compliance Listing:

Musterprüfung BO 209 – Übersicht zur Nachweisführung gem. FAR – 3.9.69

(5) Flight Manual: LBA-Approved Flight Manual for the BO 209 MONSUN
Publication LF 5E-3/70 – CAA Accepted as AIR 3043

(6) Operating Data for Aircraft:

(i) *Maintenance Manual:*

LF 5E-7/70 – Technical Description, Maintenance, Disassembly and Assembly,
Trouble Shooting – BO 209 MONSUN (Included in the Flight Manual.)

LF 40 E-9/71 – BO 209/209S Maintenance Manual (applicable to s/n 181 and on)

(ii) *Current service Information:*

BO 209 Service Bulletins

(iii) *Illustrated Parts Catalogue:*

Wartungshandbuch (Workshop Manual and Spare Parts Catalogue)

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

See email from Ulrich Haggmann, Lightweight & Historic Aircraft Support,
Flugzeug-Union Süd GmbH, EADS Deutschland, dated 5 June 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	Seating and Restraints – Safety belt/Shoulder Harness	Autoflug shoulder harness fitted as std – See EL §6-21.12 S *
91.507	Pax Information Signs – Smoking, safety belts fastened	Not Applicable – Less than 10 passenger seats
91.509 Min. VFR	(1) ASI (2) Machmeter (3) Altimeter (4) Magnetic Compass (5) Fuel Contents (6) Engine RPM (7) Oil Pressure	FAR §23.1303(a) * N/A FAR §23.1303(b) * FAR §23.1303(c) * FAR §23.1305(a) * FAR §23.1305(d)(e) * FAR §23.1305(b) *
		(8) Coolant Temp (9) Oil Temperature (10) Manifold Pressure (11) Cylinder Head Temp. (12) Flap Position (13) U/c Position (14) Ammeter/Voltmeter
		N/A – Air-cooled engine FAR §23.1305(c) * FAR §23.1305(h) * FAR §23.1305(f) * FAR §23.699(a)(2) * FAR §23.729(e) * (nosewheel) FAR §23.1351(d) *
	* Fitted as Standard – See Flight Manual Section 6.3 – Equipment List	
91.511	Night VFR Instruments and Equipment	<i>Operational requirement – To be determined as applicable</i>
91.513	VFR Communication Equipment	<i>Operational requirement – To be determined as applicable</i>
91.517	IFR Instruments and Equipment	<i>Operational requirement – To be determined as applicable</i>
91.519	IFR Communication and Navigation Equipment	<i>Operational requirement – To be determined as applicable</i>
91.523	Emergency Equipment (a) More Than 9 pax - First Aid Kits per Table 7 - Fire Extinguishers per Table 8 (b) More than 20 pax - Axe readily accessible to crew (c) More than 61 pax - Portable Megaphones per Table 9	Not Applicable – Less than 10 passenger seats Not Applicable – Less than 10 passenger seats Not Applicable – Less than 20 passenger seats Not Applicable – Less than 61 passenger seats
91.529	ELT - TSO C126 406 MHz after 22/11/2007	<i>Operational requirement – To be determined as applicable</i>
91.531	Oxygen Indicators - Volume/Pressure/Delivery	<i>Operational requirement – To be determined as applicable</i>
91.533	Oxygen for Non-Pressurised Aircraft	<i>Operational requirement – To be determined as applicable</i>
91.541	SSR Transponder and Altitude Reporting Equipment	<i>Operational requirement – To be determined as applicable</i>
91.543	Altitude Alerting Device - Turbojet or Turbofan	Not Applicable – Not turbojet or turbofan powered
91.545	Assigned Altitude Indicator	<i>Operational requirement – To be determined as applicable</i>
A.15	ELT Installation Requirements	<i>To be determined on an individual aircraft basis</i>

Civil Aviation Rules Part 135

Subpart F – Instrument and Equipment Requirements

PARA:	REQUIREMENT:	MEANS OF COMPLIANCE:
135.355	Seating and Restraints – Shoulder harness flight-crew seats	FAR §23.785
135.357	Additional Instruments (Powerplant and Propeller)	FAR §23.1305
135.359	Night Flight	<i>Operational requirement – To be determined as applicable</i>
135.361	IFR Operations	<i>Operational requirement – To be determined as applicable</i>
135.363	Emergency Equipment (Part 91.523 (a) and (b))	<i>Operational requirement – To be determined as applicable</i>
135.367	Cockpit Voice Recorder	N/A – Only for 2-crew helicopters with more than 10 pax
135.369	Flight Data Recorder	Not Applicable – Less than 10 passenger seats
135.371	Additional Attitude Indicator	Not Applicable – Not turbo jet or turbofan powered

Attachments

The following documents form attachments to this report:

Photographs first-of-type example Bölkow 209 s/n 168 ZK-MON
Three-view drawing MBB Bölkow BO 209 Monsun
Copy of LBA Type Certificate Data Sheet Number 680

Sign off

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David Gill
Team Leader Airworthiness

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Checked – 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>
Bölkow BO 209 Monsun (Up to serial number 180, and 188)	J A Evans	8/21B/32	28 July 2008