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# **Type Acceptance Report**

**TAR 99/33**

**Eagle 150B**



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## Introduction

This report details the basis on which Type Acceptance Certificate Number 99/33 was granted in the standard category in accordance with NZCAR Part 21 Subpart B. Specifically the report aims to:

- (a) Record the airworthiness certification standard used for type acceptance of the applicable model in New Zealand;
- (b) Summarise any outstanding requirements that must be complied with for the issue of a NZ Airworthiness Certificate to any models covered by the Type Acceptance Certificate.

## Foreign Type Certificate Details

Type Certificate: Certificate of Type Approval Number 179-1  
Issued by: Civil Aviation Safety Authority Australia  
Manufacturer: Eagle Aircraft Pty Ltd  
Model: 150B  
Engines: Continental IO-240-B  
Propellers: McCauley 1A135BRM7057 or CRM7057  
MCTOW 640 kg (1411 lb.)  
Noise Category: ICAO Annex 16, Volume 1 Chapter 10

The certification basis of the 150B is CARs 21 and 22 and Civil Aviation Order 101.0 Issue 6 with a design standard of JAR-VLA at Amendment 0 dated 26 April 1990, plus Orange Page Amendments VLA/91/1 and VLA/92/1 and Special Conditions EAGLE/SC/1 as specified in CAA letter S91/0227 dated 18 December 1991, for day VFR operation only.

This is an acceptable certification basis in accordance with NZCAR Part 21B para §21.41 per Appendix C(a)(2). As detailed in Advisory Circular AC21-1A JAR-VLA is an acceptable standard limited to Part 91 day-VFR operations only. Eligibility since publication of the AC has been upgraded to the standard category, in recognition of similar status given under FAR Part 23 certification. There are no non-compliances and no special conditions have been prescribed by the Director under §21.23.

## Type Acceptance Application

The application for New Zealand type acceptance was from the New Zealand agent, Dennis Thompson International Ltd, dated 30th March 1999. The first-of-type example was serial number 019, VH-NZL, which was registered in New Zealand as ZK-EGL.

Type Acceptance Certificate No.99/33 was granted on 5th May 1999.

The Eagle 150B is a development of the Eagle X-TS with a McCauley propeller, and is the production version from serial number 016 on. Serial numbers 001-015 are eligible for redesignation when modified to the configuration of Master Documentation List Eagle 150B. There were two earlier models, the X-TS “100” and the X-TS 150. The 100 can be upgraded to 150 status by incorporation of Service Bulletin 1024. This calls up modifications to reduce the stall speed through aerodynamic improvements (wing and canard root fillet fairings, revised vortex generators) and a reduction in empty weight (smaller battery and removal of the oil cooler). The Model 150 evolved after some difficulties following initial certification, when it was discovered the aircraft did not meet JAR-VLA stall speed requirements, and for a period it was restricted to single-seat operations. In the normal category the MTOW of the X-TS “100” is limited to 595 kg.

The Eagle 150B is a two-place single engine composite material aircraft with three lifting surfaces; canard, mainplane and horizontal stabiliser. The majority of the structure is of sandwich type construction with carbon fibre laminates separated by a Nomex® core. All external portions of the airplane structure exposed to sunlight must be painted predominantly white. The paint and primer must conform to approved specifications.

## 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: CASA CTA Number 179-1 Issue 3 dated 11 November 1997  
CASA CTA Data Sheet No. 179-1 Revision 6 dated 17 March 1999  
Model 150B approved 6 November 1997  
FAA Import Type Certificate No.A00005LA issued February 11, 1999  
FAA TCDS A00005LA – Model 150B approved February 11, 1999
- (2) Airworthiness design requirements:  
CASA Letter Ref. S91/0227 dated 18 Dec 1991 – Eagle-XTS Certification Basis  
The Special Conditions related to the unique multi-surface plan configuration of the Eagle aircraft. The application and distribution of air, ground and inertia loads, including tail balancing and gust loads, and the mutual influence of the aerodynamic surfaces had to be considered in a rational and conservative manner.
- (3) Certification compliance listing:  
Compliance Statement for Eagle 150B – Issue D dated 29 April 1998  
Design Weight 650 kg (1433 lb.) – *includes detailed compliance checklist*
- (4) Flight manual: CASA Approved Eagle 150B Flight Manual – Document FM 150B  
CAA Accepted as AIR 2661
- (5) Illustrated Parts Catalogue: Being updated - To be issued
- (6) Maintenance manual and service data for aircraft:  
(engine and propeller data already held):  
Eagle 150B Service Manual – Document SM 150B – Section 4 contains  
Airworthiness Limitations. The safe life of the airframe is set at 10,000 hours.  
Service Bulletin/Service Letters Register Eagle 150B

(7) Agreement from manufacturer to supply updates of data in (4), (5) and (6):

Receipt of Engineering Controlled Document form states Amendments will be provided as required to the holder of the documents.

## Additional New Zealand Certification requirements

Compliance with the following additional NZ requirements has been reviewed and were found to be covered by either the original certification requirements or the basic build standard of the aircraft, as noted:

### 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 Appendix B # .35 | <i>Agricultural Aircraft – Not Applicable</i>           |

### 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   | JAR-VLA §785 and §1309 – Four point shoulder type harness fitted as standard – see Flight Manual §7.6  |
| 91.507                  | Pax Information Signs - Smoking, safety belts fastened   | <i>N/A – Less than 10 passenger seats</i>  |
| 91.509 Min. VFR         | (1) ASI<br>(2) Machmeter<br>(3) Altimeter<br>(4) Magnetic Compass<br>(5) Fuel Contents<br>(6) Engine RPM<br>(7) Oil Pressure   | JAR-VLA §1303(a)<br><i>N/A</i><br>JAR-VLA §1303(b)<br>JAR-VLA §1303(c)<br>JAR-VLA §1305(a)<br>JAR-VLA §1305(d)<br>JAR-VLA §1305(b)   |
| 91511 Night             | (1) Turn and Slip<br>(2) Position Lights   | <i>N/R – Day-VFR only</i><br><i>N/R – Day-VFR only</i>   |
| 91.517 IFR              | (1) Gyroscopic AH<br>(2) Gyroscopic DI<br>(3) Gyro Power Supply<br>(4) Sensitive Altimeter   | Fitted as std – See FM §7.4<br>Fitted as std – See FM §7.4<br><i>N/R – Not IFR Approved</i><br>Fitted as std – See FM §7.4   |
| 91.519                  | IFR Communication and Navigation Equipment   | Bendix king KY-97A VHF COM fitted as standard  |
| 91.523 Emergency Eqmpt. | (a) More Than 10 pax - First Aid Kits per Table 7<br>- Fire Extinguishers per Table 8<br>(b) More than 20 pax - Axe readily acceptable to crew<br>(c) More than 61 pax - Portable Megaphones per Table 9 | <i>N/A – Less than 10 passenger seats</i><br><i>N/A – Less than 10 passenger seats</i><br><i>N/A – Less than 20 passenger seats</i><br><i>N/A – Less than 61 passenger seats</i> |
| 91.529                  | ELT - TSO C91a after 1/4/97 (or replacement)   | <b>To be determined on an individual aircraft basis</b>  |
| 91.531                  | Oxygen Indicators - Volume/Pressure/Delivery   | <i>N/A – Not fitted</i>  |
| 91.533                  | Oxygen for unpressurised aircraft  | <i>N/A – Not fitted</i>  |
| 91.541                  | SSR Transponder and Altitude Reporting Equipment   | Bendix King KT-76C with Mode C available as an option  |
| 91.543                  | Altitude Alerting Device - Turbojet or Turbofan  | <i>N/A – Piston-powered aircraft</i>   |
| 91.545                  | Assigned Altitude Indicator  | <i>N/A – Not approved for IFR operations</i>   |
| A.2                     | (a) Fuel contents gauge<br>(b) Fuel and oil placards   | <i>N/A – Gauge marked in litres</i><br>Oil grade placarded – See MM Chapter 11 Required Placards<br><b>Fuel specification and/or grade placard required</b>                      |
| A.15                    | ELT Installation Requirements  | <b>To be determined on an individual aircraft basis</b>  |

## Summary

Type Acceptance Certificate No. 99/33 has been granted to the Eagle Aircraft Model 150B and all serial numbers are now eligible for issue of a New Zealand Airworthiness Certificate in the Standard Category in accordance with CAR §21.177, subject to any

outstanding operational requirements noted above being met. The Eagle 150B is limited to day-VFR non-Air Transport operations.

## **Attachments**

The following documents form attachments to this report:

Photographs of the First-of-Type example serial number 019 registered ZK-EGL  
Three-view drawing Eagle Aircraft Model 150B  
Copy of Certificate of Type Approval/ CTA Data Sheet No. 179-1

## **Sign off**

David Gill  
Airworthiness Engineer

Date: 5th May 1999