
Type Acceptance Report

TAR 8/21B/31 – Revision 1

EXTRA EA 300 Series

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Executive Summary

New Zealand Type Acceptance has been granted to the Extra EA 300 Series based on validation of Type Certificate number EASA.A.362. There are no special requirements for import.

Applicability is currently limited to the Models and/or serial numbers detailed in Section 2, 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. 8/21B/31 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 notes the status of all models included under the State-of-Design type certificate which have been granted type acceptance in New Zealand, which are listed in Section 2. The history of the Extra EA 300 Series type acceptance in New Zealand under type certificate EASA.A.362 is listed in Appendix 1.

2. Aircraft Certification Details

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

Manufacturer: Extra Flugzeugproduktions- und Vertriebs- GmbH
Extra Flugzeugbau GmbH (up to 15/9/2003, serial no. 167)

Type Certificate: EASA.A.362
Issued by: European Aviation Safety Agency

Production Approval: DE.21G.0180

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

(i) **Model:** EA 300/L, EA 300/LC

MCTOW: 950 kg [2095 lb.] Normal & Two-Seat Aerobatic / ACRO III
870 kg [1918 lb.] Two-Seat Aerobatic / ACRO II (± 8 g)
820 kg [1808 lb.] Single-Seat Aerobatic / ACRO I (± 10 g)

Max. No. of Seats: 2

Noise Standard: ICAO Annex 16, Volume 1

Engine: AEIO-540-L1B5 or -L1B5/D
Type Certificate: 1E4
Issued by: Federal Aviation Administration

AEIO-580-B1A
Type Certificate: E00004NY
Issued by: Federal Aviation Administration

Propeller: MTV-9-B-C/C198-25
MTV-9-B-C/C200-15 – EA 300/L
Type Certificate: P.096
Issued by: European Aviation Safety Agency

MTV-14-B-C/C190-17 – EA 300/L
MTV-14-B-C/C190-130 – EA 300/LC
Type Certificate: P.017
Issued by: European Aviation Safety Agency

3. Application Details and Background Information

The application for New Zealand type acceptance of the Extra EA 300/L was from the importer, XFlight, dated 31 May 2008. The first-of-type example was serial number 085, registered ZK-XRA. The Extra EA 300 is a tandem two-seat low-wing high performance aerobatic monoplane with a tubular steel frame fuselage and composite construction wing and empennage.

Type Acceptance Certificate No. 8/21B/31 was granted on 27 November 2008 to the Extra EA300/L based on validation of EASA Type Certificate EASA.A.362. Specific applicability is limited to the coverage provided by the operating documentation supplied. There are no special requirements for import into New Zealand.

This report was raised to Revision 1 to include the EA 300/LC. The application was from the importer, Mr David Cranna, and the first-of-type example was serial number LC079, registered ZK-XLX. Type acceptance was granted on 29 September 2020.

The first Extra design was the Model EA 230, a single-seat unlimited class competition aerobatic aircraft designed by Walter Extra in the early 1980s based on the layout of the Laser Z200 he was previously flying. It was a conventional layout mid-wing cantilever monoplane with fixed tailwheel undercarriage, wire-braced empennage and 200 hp engine. The fuselage and empennage were of steel tube construction, but the wings were wooden. From that was developed the two-seat EA 300, which had new composite construction wings and empennage and 300 hp engine. The EA 300/L "Low" is one of several variants. It has the wing mounted lower in the fuselage and is the most popular production model. The EA 300/LC, known commercially as the Extra 330LX, is a development of the EA 300/L with improved aerobatic performance due to enlarged control surfaces (ailerons and vertical tail from the EA 300/SC and horizontal tail from the EA 300/LT but without the rounded tips) as well as a slightly reduced empty weight.

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.362

EASA Type Certificate Data Sheet no. A.362 at Issue 07 dated 08-Sept-2013

– Model EA 300/L approved 31 January 1995

– Model EA 300/LC approved 8 April 2011

(2) Airworthiness design requirements:

(i) *Airworthiness Design Standards:*

The certification basis of the EA 300 Series is FAR Part 23 effective February 1, 1965, including Amendments 23-1 through 23-34. Special Conditions were applied for Fatigue/Damage Tolerance Substantiation of Composite Structure, for the optional smoke system and for glider towing. For the EA 300/LC two Equivalent Safety Findings were made. These have been reviewed and accepted by CAA. This is an acceptable certification basis in accordance with NZCAR Part 21B paragraph §21.41, 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:*

Doc. EA-03404-1/2 – EASA C-1/C-4 (FAA 23-ACE-65) – Because of their composite construction this SC required the wing and carry-through, horizontal stabiliser carry-through and attaching structure, and all moveable control surfaces and their attaching structure to be evaluated to damage tolerance criteria as prescribed. Bonded joints must be evaluated under residual strength criteria. In addition representative acrobatic maneuver and cross-country flight profiles must be used to establish a rational fatigue load spectrum.

Doc. EA-03404-5 – LBA I 311-1086/96 – Special Conditions for Smoke System EA 300 – Criteria were applied with the primary aim of preventing a fire when using the optional smoke system, which uses paraffin oil injected into the exhaust manifolds. These included minimising the following hazards: flammability; smoke and toxic vapour in the cockpit (including during aerobatics); strength of feeder tube to prevent leaks and environmental pollution; and appropriate maintenance and operating instructions.

Doc. EA-03404-4 – LBA I 23-60/100 – Glider Towing – This defined the certification requirements for air towing. This included appropriate load assumptions (60° cone directional variation of the defined tow force) which must be complied with. Minimum standards were specified for equipment required for air tow release operation (certificated air tow hook, mirror for observation of the glider, release handle, control link cable diameter, air tow properties, air tow breaking element, use of shoulder harness, and cylinder head temperature indicator); the installation of this equipment; the related operational specifications (handle travel and force, backlash in handle travel) and operating limitations (min. and max. airspeed, MTOW of the glider, length of air tow placards); as well as performance information (T/O distance, climb); and appropriate maintenance and operating instructions.

(iii) Equivalent Level of Safety Findings:

EA 300/LC:

CRI B-102 – FAR §23.171, 173, 175 Aerodynamic Stability – Design rules require that aircraft have longitudinal, directional and lateral stability. However high-performance aerobatic aeroplanes are designed for high manoeuvrability and are capable of torque and tumble manoeuvres. The ELOS allows for neutral longitudinal stability at aft centre of gravity based on the aircraft showing a number of compensating factors.

FAR §23.207 Stall Warning – The stall must be clearly and distinctively identified either by natural aerodynamic behaviour and/ or by a stall warning device. The latter is not a desirable feature for an aerobatic aeroplane dedicated mainly to competition and training, because of the annoying false warnings likely due to that type of flying. Stall characteristics for the EA300 were extensively evaluated in flight tests, which showed a detectable natural buffet which occurs prior to the stall. However compensating features were required because the aircraft fails to comply fully with the design requirements.

(iv) Airworthiness Limitations:

See Service Manual Chapter 04. (The airframe has a 6000 hour life limit.)

(3) Aircraft Noise and Engine Emission Standards:

(i) Environmental Standard:

ICAO Annex 16, Volume 1, Chapter 10.4a. [FAR 36 Appendix G]

(ii) Compliance Listing:

Doc. EA-06308.06 Noise Measurement Report – EA 300/L/MTV-14/AEIO-540

For noise levels see TCDS for Noise EASA.A.362 and Flight Manual §2.16.

(4) Certification Compliance Listing:

Doc. EA-06501.0 – Compliance Report EA 300/L

Doc. EA-06401.28 – Compliance Report EA 300/L with AEIO-580-B1A Engine

Doc. EA-06401.24 – MoC List/Compliance Report EA 300/S/L – Smoke System

Doc. EA-06401.21 – Supplemental Type Approval EA 300/L Single Seat Canopy

Doc. EA-06401.20 – Supplemental Type Approval EA 300/L Category ACRO III

Doc. EA-03401.19 – Supplemental Type Approval EA 300 Air Tow Release

Doc. EA-06401.01 – Supplemental Type Approval EA 300 Exhaust System and Silencer EA300-606000

Doc. EA-03401.22 – MoC List and Compliance Summary – EA 300; EA 300/L; EA 300/S; – Change of Oil Cooler System and Governor

Doc. EA-0E102.1 – EA 300/LC Description of Differences to EA 300/L Type Design – Issue G dated 09.11.2015

Doc. EA-0E401.00 – Compliance Report EA 300/LC – Issue E dated 30.09.2014

Doc. EA-0E403.00 – Means of Compliance List EA 300/LC

Doc. EA-0E401.02 – Compl. Report EA 300/LC – Alternative 4-Blade Propeller

Doc. EA-0E403.02 – MoC List EA 300/LC – Alternative 4-Blade Propeller

Doc. EA-0E401.34 – Compl. Report EA 300/LC – Aspen SW2.4.1 & Garmin GTN

Doc. EA-0E403.34 – MoC List EA 300/LC – Aspen SW2.4.1 & Garmin GTN

Doc. EA-0E401.42 – Compliance Report EA 300/LC – Garmin G5

Doc. EA-0E403.42 – Means of Compliance List EA 300/LC – Garmin G5

- (5) Flight Manual: Pilot's Operating Handbook and LBA Approved Flight Manual
Extra 300/L – Doc. No. EA-06701 – CAA Accepted as AIR 3074
- Pilot's Operating Handbook and EASA Approved Flight Manual
Extra 300/LC – Doc. No. EA-0E701 – CAA Accepted as AIR 3964
- (6) Operating Data for Aircraft:
- (i) *Maintenance Manual:*
Service Manual EA 300/L – Document Number EA-06702

 - Service Manual EA300/LC – Document Number EA-0E702

 - (ii) *Current service Information:*
Doc. EA-03704 List of Service Bulletins/Service Letters Type EA-300

 - (iii) *Illustrated Parts Catalogue:*
Parts Catalogue EA 300/L – Document Number EA-06703
- (7) Agreement from manufacturer to supply updates of data in (5), and (6):
See email from Chief of the Office of Airworthiness dated 4/10/08. All publications are also available on the Extra website at <http://www.extraaircraft.com/techserv.asp>

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	5-point harness fitted as standard [See Flight Manual §7.8]
91.507	Pax Information Signs – Smoking, safety belts fastened	Not Applicable – Less than ten passenger seats
91.509	Minimum Instruments and Equipment	
	(1) ASI	FAR §23.1303(a) *
	(2) Machmeter	N/A
	(3) Altimeter	FAR §23.1303(b) *
	(4) Magnetic Compass	FAR §23.1303(c) *
	(5) Fuel Contents	FAR §23.1305(a) *
	(6) Engine RPM	FAR §23.1305(d) *
	(7) Oil Pressure	FAR §23.1305(b) *
	* See Standard Equipment list in Flight Manual Section §7.6.1	
91.511	Night VFR Instruments and Equipment	Not Applicable – Only approved for Day VFR operations
91.513	VFR Communication Equipment	Operational requirement – Compliance as applicable
91.517	IFR Instruments and equipment	Not Applicable – Only approved for Day VFR operations
91.519	IFR Communication and Navigation Equipment	Not Applicable – Only approved for Day VFR operations
91.523	Emergency Equipment	
	(a) More Than 10 pax – First Aid Kits per Table 7	Not Applicable – Less than 10 passenger seats
	– Fire Extinguishers per Table 8	Not Applicable – Less than 10 passenger seats
	(b) More than 20 pax – Axe readily acceptable to crew	Not Applicable – Less than 20 passenger seats
	(c) More than 61 pax – Portable Megaphones per Table 9	Not Applicable – Less than 61 passenger seats
91.529	ELT – TSO C126 406 MHz after 22/11/2007	Operational requirement – Compliance as applicable
91.531	Oxygen Indicators – Volume/Pressure/Delivery	Not fitted as Standard. Max. operating altitude is 16,000 ft.
91.533	Oxygen for Un-pressurised Aircraft	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 – Not turbo jet or turbofan powered
91.545	Assigned Altitude Indicator	Not Applicable – Only approved for Day VFR operations
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 & Restraints – Shoulder harness flight-crew seats	FAR §23.785
135.357	Additional Instruments (Powerplant and Propeller)	FAR §23.1305
135.359	Night Flight	Not Applicable – Only approved for Day VFR operations
135.361	IFR Operations	Not Applicable – Only approved for Day VFR operations
135.363	Emergency Equipment (Part 91.523 (a) and (b))	Operational requirement – Compliance as applicable
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

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:

Extra Flugzeugbau Drawing EA-061025 "Extra 300/L 3-View-Drawing"

3-View drawing Extra Model EA 300/LC "Extra 330LX"

Copy of EASA Type Certificate Data Sheet Number EASA.A.362

Sign off

A blue ink signature of David Gill is written over a circular blue seal of the Civil Aviation Authority of New Zealand. The seal contains the text "CIVIL AVIATION AUTHORITY OF NEW ZEALAND" and the number "6853".

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David Gill
Team Leader Aircraft Inspection

A blue ink signature of Tim Dutton is written over a circular blue seal of the Civil Aviation Authority of New Zealand. The seal contains the text "CIVIL AVIATION AUTHORITY OF NEW ZEALAND" and the number "5614".

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Checked – Tim Dutton
Flight Test Engineer

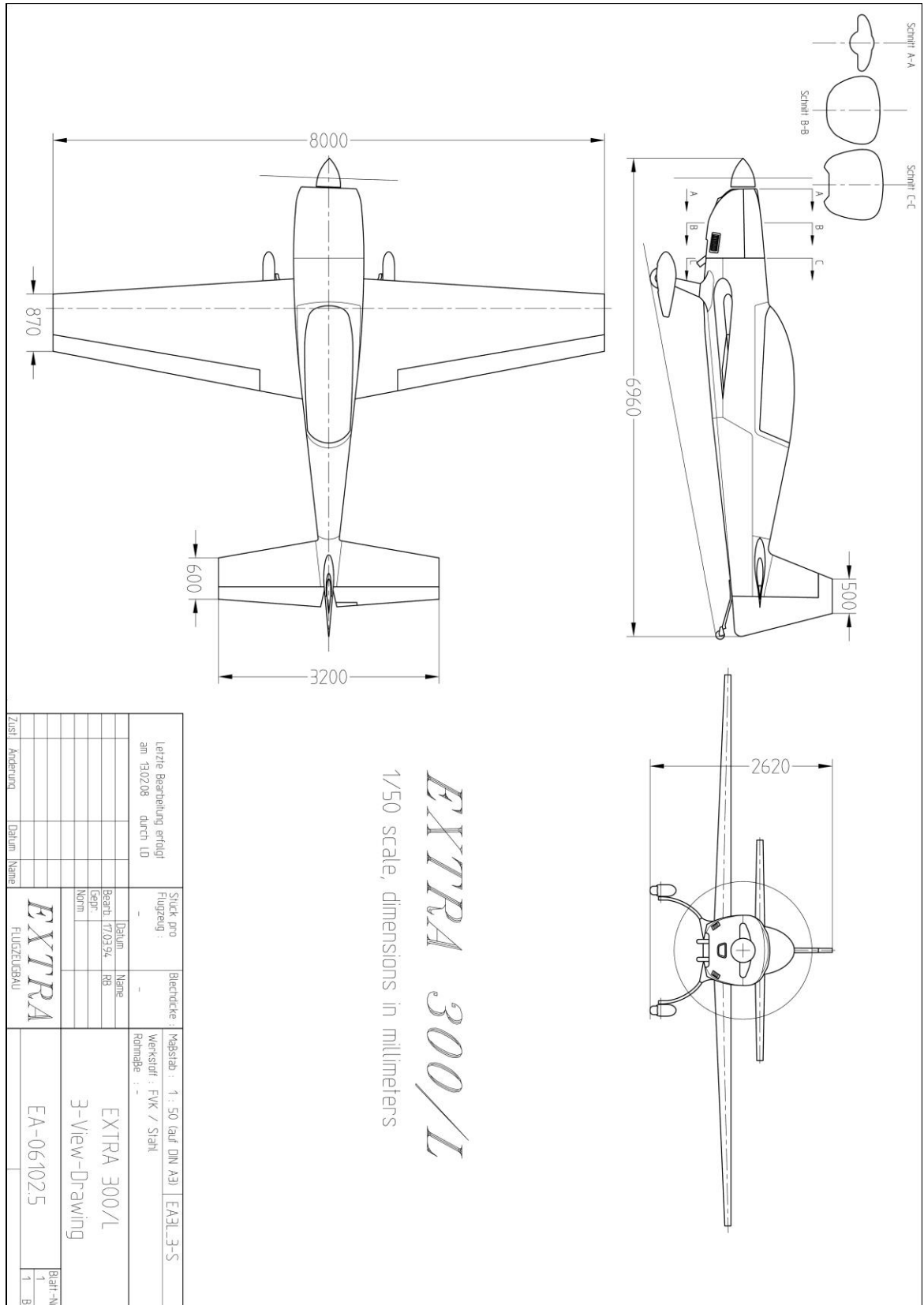
Appendix 1

List of Type Accepted Variants:

<i>Model:</i>	<i>Applicant:</i>	<i>CAA Work Request:</i>	<i>Date Granted:</i>
EA 300/L	Aviation Holdings 2008 Partnership	8/21B/31	27 November 2008
EA 300/LC	D. G. Cranna	21/21B/1	29 September 2020

Attachments:

(i) 3-View Drawing Extra EA 300/L



(ii) 3-View Drawing Extra EA 300/LC

