Type Acceptance Report

TAR 3/21B/27 – Revision 1

KAMAN K-1200

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Executive Summary

New Zealand Type Acceptance has been granted to the Kaman K-1200 based on validation of FAA Type Certificate number TR7BO. 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).

1. Introduction

This report details the basis on which Type Acceptance Certificate No. 3/21B/27 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

Manufacturer:	Kaman Aerospace Corporation
Type Certificate:	TR7BO
Issued by:	Federal Aviation Administration
Model:	K-1200
MCTOW:	No external load: 3175 kg (7000 lb.) With external load: 5443 kg (12000 lb.)
Max. No. of Seats:	One
Noise Standard:	FAR Part 36 to Amendment 36-20
Engine:	Honeywell T5317A-1
	Type Certificate: E17EA Issued by: Federal Aviation Administration

3. Type Acceptance Details

The application for New Zealand type acceptance was by letter from the manufacturer Kaman Aerospace Corporation dated 24 September 2002, received via the FAA Boston Aircraft Certification Office, their letter dated 5 November 2002. The K-1200 is a single-seat single-turbine engine powered helicopter with fixed undercarriage which uses the Kaman system of twin intermeshing rotors controlled by servo-tabs. The first-of-type example was serial number A94-0029 registered as ZK-HEE on 4 December 2008.

Type Acceptance Certificate Number 3/21B/27 was granted on 4 March 2003 to the Kaman K-1200 based on validation of FAA Type Certificate TR7BO, and includes the T5317 Series engine based on FAA Type Certificate E17EA. Specific applicability is limited to the coverage provided by the operating documentation supplied. There are no special requirements for import into New Zealand.

The helicopter was originally certificated in both the Standard and the Restricted categories. The K-1200 was only approved to operate above 6000 lb MAUW in the Restricted category for special purpose operations, including; agricultural operations as defined in FAR §137.3; dispensing of firefighting materials; and carriage of external load operations as defined in FAR §133.1(b). The higher weight would be allowed for normal category operations once a noise test has been carried out. (See the conditions under Exemption 6433.)

Revision 1 of this report was issued to amend the gross weight from 6,500 lbs to 7,000 lbs. With the change in 14CFR27 the K1200 can operate in the normal category up to 7000 lbs. However, it is only approved above 6000 lbs for specific operations because it has not been tested for 14CFR36 noise standards at the higher weights. The application was by letter from the manufacturer dated April 23, 2014. Type acceptance was granted on 13 November 2014. An operator has the option of operating at either 6,500 pounds gross weight, or going to the 7000 pounds gross weight. If the latter option is chosen then reduced life-limits for certain components apply.

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:

FAA Type Certificate Number TR7BO

FAA Type Certificate Data Sheet no. TR7BO at Revision 3 dated July 20, 2007 – Model K-1200 approved August 30, 1994

FAA Type Certificate Data Sheet no. E17EA at Revision 11 dated October 6, 2006 – Model T5317A-1 approved July 21, 1993

(2) Airworthiness design requirements:

The certification basis of the K-1200 is FAR Part 27 including amendment 27-1 through 27-28. For the maximum weight of 7000 lb. this was updated to include amendments 27-1 through 27-37, except FAR §27.561(c), §27.865(b)(3)(ii) and §27.1365(c). One exemption was originally granted and one equivalent safety finding made. Compliance with the falling and blowing snow requirements of §27.1093(b)(1)(ii) has been established. Compliance was also shown with the instrument flight rules (IFR) operational requirements of Appendix B to FAR 27; the applicable portions of FAR §27.865 for Personnel carrying device system (PCDS); and Amendment 27-36 for human external cargo (HEC).

This is an acceptable certification basis in accordance with NZCAR Part 21B Para §21.41, as FAR 27 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.

The certification basis of the T5317A-1 is FAR 33 at Amendment 5. This is the basic standard for aircraft engines called up under Part 21 Appendix C.

(i) Exemptions:

FAA Exemption No 6433 (Increase of normal category weight to 6,500 lbs.) This was granted based on the K-1200 meeting the latest and most stringent certification standards now applicable to helicopters and the fact that the industry working group was looking at increasing the MAUW limit of FAR 27. The exemption was subject to three conditions:

1. The design cannot be changed to add passengers as part of the weight increase;
2. The helicopter and all modifications must meet the design standards at the higher weight;
3. Only specific operations are permitted at 6500 lb unless a noise test is conducted.

(ii) Equivalent Level of Safety Findings:

FAA Issue paper F-3 - Equivalent Safety Finding §27.173(b) for Longitudinal Static Stability of the K-1200 – Kaman requested acceptance without the need for augmentation or enhancement. This was accepted based on flight tests of the helicopter with the Trim Bias Actuator (TBA) removed, which showed no perceptible difference in handling qualities to the pilot.

(iii) Airworthiness Limitations:

See Chapter 4 of KMM

(3) Aircraft Noise and Engine Emission Standards:

(i) Environmental Standard:
The Model K-1200 has been certificated under FAR Part 36, effective December 1, 1969, including Amendments 36-1 through 36-20.

(ii) Compliance Listing:
FAR 36 Noise Certification Compliance Report: Kaman K-1200, Report 1146, dated November 1993.

The A-weighted sound exposure levels (SEL) were as follows:

Rotor RPM	270	260
Clean Configuration (dB)	82.5	81.6
High-drag Configuration (dB)	81.8	82.5

(4) Certification Compliance Listing:

Kaman Report Number R-2081 – Compliance Checklist Kaman K-1200 Helicopter – Revision B dated 29 August 1994 (FAA Project No. TC0288BO-R)

Kaman Report R-2279 – Static & Fatigue Strength Evaluation K-1200 Certification for Increased Gross Weight – dated March 17, 2005 (FAA Project TD0953BO-R)

(5) Flight Manual: K-1200 FAA Approved Rotorcraft Flight Manual issued 30-8-94
CAA Accepted as AIR 2820

(6) Operating Data for Aircraft and Engine:

(i) Maintenance Manual:
K-1200 K-MAX Maintenance & Servicing Instructions – KMM issued 30-8-94
Allied Signal Report No. 330.2 – Engine Maintenance Manual T5313B/5317

(ii) Current service Information:
K-1200 K-MAX Service Bulletins
K-1200 K-MAX Service Letters
Honeywell T5313B/5317 Service Bulletins and Index

(iii) Illustrated Parts Catalogue:
K-1200 K-MAX Illustrated Parts Catalog – KPC issued 20-6-02
Allied Signal Report No. 330.4 – IPC Engine Models T5313B/5317A/A-1/B

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

Kaman letter reference L2002-038 dated 24-9-02 from Terrence P Fogarty, Director, Logistics Operations, Kaman Aerospace Corporation.

Email dated 4-2-03 from Jeff Tormanen, Data Distribution Coordinator, General Aviation Publications, Honeywell.

(8) Other information:

K-1200 K-MAX Wiring Diagram Manual – WDM issued 1-12-95
K-1200 K-MAX Publications List dated 31-12-02
K-1200 K-MAX Cockpit Checklist KAC-001 Rev 2 dated 31-3-00

5. Additional New Zealand Requirements

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	***To be determined on an individual aircraft basis***
B.2	Crew Protection Requirements - CAM 8 Appdx. B # .35	Not Applicable – Agricultural aircraft only

Appendix E - Helicopters

PARA:	REQUIREMENT:	MEANS OF COMPLIANCE:
E.1	Doors and Exits	***To be determined on an individual aircraft basis***
E.2.1	Emergency Exit Marking	***To be determined on an individual aircraft basis***

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		Standard fit – See Flight Manual page 8-25.	
91.507	Pax Information Signs - Smoking, safety belts fastened		N/A – Not more than 10 Passengers	
91.509 Min. VFR	(1) ASI (2) Machmeter (3) Altimeter (4) Magnetic Compass (5) Fuel Contents (6) Engine RPM (7) Oil Pressure	Std fit – KMM 31-00-00 fig 1 N/A Std fit – KMM 31-00-00 fig 1 Std fit – KMM 31-00-00 fig 1 Std fit – KMM 31-00-00 fig 1 Std fit – KMM 31-00-00 fig 1 Std fit – KMM 31-00-00 fig 1	(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 Std fit –KMM 31-00-00 fig 1 N/A N/A N/A N/A Std fit –KMM 31-00-00 fig 1
91.511 Night	(1)Turn and Slip (2) Position Lights	Std fit – KMM 31-00-00 fig 1 Std fit – Flight Manual p 8-15	(3) Anti-collision Lights (4) Instrument Lighting	Std fit – Flight Manual p8-15 Std fit – Flight Manual p8-15
91.517 IFR	(1) Gyroscopic AH (2) Gyroscopic DI (3) Gyro Power Supply (4) Sensitive Altimeter	NOTE: There is an approved IFR package – Flight Manual prohibits IFR flight without the approved package – Flight Manual also lists minimum equipment required for IFR.	(5) OAT (6) Time in hr/min/sec (7) ASI/Heated Pitot (8) Rate of Climb/Descent	
91.519	IFR Communication and Navigation Equipment		***To be determined on an individual aircraft basis***	
91.523	Emergency Equipment (a) More Than 10 pax - First Aid Kits per Table 7 - Fire Extinguishers per Table 8 (b) More than 20 pax - Axe readily acceptable to crew (c) More than 61 pax - Portable Megaphones per Table 9		 N/A – Not more than 10 Passengers N/A – Not more than 10 Passengers N/A – Not more than 20 Passengers N/A – Not more than 61 Passengers	
91.529	ELT - TSO C91a after 1/4/97 (or replacement)		***To be determined on an individual aircraft basis***	
91.531	Oxygen Indicators – Volume/Pressure/Delivery		***To be determined on an individual aircraft basis***	
91.533	Supplemental oxygen for non-pressurised aircraft		***To be determined on an individual aircraft basis***	
91.541	SSR Transponder and Altitude Reporting Equipment		***To be determined on an individual aircraft basis***	
91.543	Altitude Alerting Device – Turbojet or Turbofan		N/A	
91.545	Assigned Altitude Indicator		***To be determined on an individual aircraft basis***	
A.15	ELT Installation Requirements		***To be determined on an individual aircraft basis***	

Civil Aviation Rules Part 135

Subpart F - Instrument and Equipment Requirements

PARA:	REQUIREMENT:		MEANS OF COMPLIANCE:
135.355	Seating and Restraints – Shoulder harness for flight-crew seats		FAR 27.2(a)
135.357	Additional Instruments (Powerplant and Propeller)		FAR 27.1305
135.359	Night Flight	Landing light, Pax compartment	Standard fit – See Flight Manual page 8-15
135.361	IFR Operations	Speed, Alt, spare bulbs/fuses	***To be determined on an individual aircraft basis***
135.363	Emergency Equipment (Part 91.523 (a) and (b))		***To be determined on an individual aircraft basis***
135.367	Cockpit Voice Recorder		***Only applicable to 2-crew helicopters with more than 10 pax***
135.369	Flight Data Recorder		N/A – Less than 10 passenger seats
135.371	Additional Attitude Indicator		N/A – Not turbo jet or turbofan powered

Attachments

The following documents form attachments to this report:

Three-view drawing Kaman Model K-1200 “K-Max”
Copy of FAA Type Certificate Data Sheet Number TR7BO

Sign off

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Greg Baum
Airworthiness Engineer

Checked – David Gill
Team Leader Airworthiness

Appendix 1

List of Type Accepted Variants:

Model:	*Applicant:*	*CAA Work Request:*	*Date Granted:*
K-1200 (6500 lb MTOW)	Kaman Aerospace Corp.	3/21B/27	10 Mar 2003
K-1200 (7000 lb MTOW)	Kaman Aerospace Corp.	15/21B/6	13 Nov 2014