Type Acceptance Report

TAR 98/08 – Revision 2

CESSNA 150/152 Series

TABLE OF CONTENTS

Executive Summary

New Zealand Type Acceptance has been granted to the Cessna 150/152 and Aerobat Series based on validation of FAA Type Certificate number 3A19. There are no special requirements for import.

All models listed under the FAA type certificate have been type accepted in New Zealand, 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.)

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. 98/08 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 models in New Zealand; and

(b) Identify any special conditions for import applicable to any models 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. Appendix 1 details which models have been type accepted in accordance with the provisions of CAR Part 21B and which were certificated prior to that under NZCAR Section B.9 and are now type accepted under the transitional arrangements of Part 21 Appendix A(c).

2. Aircraft Certification Details

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

Manufacturer:	Cessna Aircraft Company
Type Certificate Holder:	Textron Aviation Inc. (since July 29, 2015)
Type Certificate:	3A19
Issued by:	Federal Aviation Administration
Production Approval:	Delegation Option Manufacturer No. CE-1 FAA Production Certificate No.4

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

(i) **Models:** 150, 150A, 150B, 150C, 150D
150E, 150F, 150G, 150H, 150J
150K, A150K, 150L, A150L
150M, A150M

MCTOW:	1500 lb. [680 kg] 1600 lb. [726 kg] – Model 150D on
Max. No. of Seats:	2
Noise Standard:	Not Applicable
Engine:	Continental O-200-A Type Certificate: E-252 Issued by: Federal Aviation Administration
Propeller:	Sensenich 69CK Type Certificate: P-904 Issued by: Federal Aviation Administration McCauley 1A100/MCM or 1A101/DCM McCauley 1A101/GCM, /HCM, /PCM McCauley 1A102/OCM Type Certificate: P-918 Issued by: Federal Aviation Administration

(ii) **Models:** 152, A152

MCTOW: 1670 lb. [757 kg]

Max. No. of Seats: 2

Noise Standard: FAR Part 36

Engine: Lycoming O-235-L2C or -N2C
Type Certificate: E-223
Issued by: Federal Aviation Administration

Propeller: McCauley 1A103/TCM
Type Certificate: P50GL
Issued by: Federal Aviation Administration

3. Application Details and Background Information

The application for New Zealand type acceptance of the Model 150J was from Messrs P R & C M McGregor, dated 1 December 1997. The first-of-type aircraft was serial number 15069904 registered ZK-SUM. The Cessna 150/152 series is a two-seat high-wing all-metal single-engine light training aircraft.

Type Acceptance Certificate No. 98/08 was granted on 10 December 1997 to the Cessna 150J based on validation of FAA Type Certificate 3A19. There are no special requirements for import into New Zealand.

This report was raised to Revision 1 to include the 1985 Model 152 serial numbers 15285940 through 15286033, and to update the report to the latest format. The applicant was the Manawatu Districts Aero Club, and the first-of-type was serial number 15286015 registered ZK-JDC. Type acceptance was granted on 26 June 2008.

Revision 2 to this report added all the other variants and serial number ranges of the 150/152 Series not previously included. This was at the request of the type certificate holder, who has provided access to all technical publications.

The Cessna 150 was developed as a successor to the popular Cessna 140B which finished production in 1951. The main changes were the use of tricycle landing gear, and replacing the rounded wingtips and horizontal and vertical stabilizers with more modern, squared-off profiles. In addition, the narrow, hinged wing flaps of the 140 were replaced by larger, more effective Fowler flaps. The 150 Series followed the usual Cessna practice of annual model changes with incremental improvements. The omnivision rear window was introduced on the 1964 150D, while the swept rear vertical fin was fitted from the 1967 150F onwards. In 1961, the main gear struts were moved aft two inches to improve tail-heavy tendencies on the ground, and tubular gear legs with a wider track were added in 1971. The gross weight was increased from 1500 pounds to 1600 pounds in 1964. Electric flaps of 40 degrees were installed in 1966, but travel was later limited to 30 degrees. The A150 Aerobat had a strengthened airframe with jettisonable doors.

The 150J is identical to the previous 150G/H except for minor cosmetic changes to the doors, window seals, instrument panel, control yoke, compass relocation and other miscellaneous items of equipment, plus new nose wheel fairings.

The Cessna 152 was a development of the Model 150, the major design change being the substitution of the 110 hp Lycoming O-235 engine, along with associated changes to the engine cowl, exhaust system, propeller, engine mount and baffles. The electrical system was changed to 28 volts and the maximum all-up weight increased to 1670 lb.

The first Model 150 on the New Zealand Civil Aircraft Register was serial number 17688 registered ZK-BPO in November 1959. The first Model 152 was serial number 152-80954 registered ZK-EKM in March 1978.

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:

FAA Type Certificate Number 3A19

FAA Type Certificate Data Sheet no. 3A19 at Revision 50 dated July 21, 2017
- Model 150 approved July 10, 1958
- Model 150A approved June 14, 1960
- Model 150B approved June 20, 1961
- Model 150C approved June 15, 1962
- Model 150D approved July 19, 1963
- Model 150E approved June 18, 1964
- Model 150F approved May 27, 1965
- Model 150G approved May 5, 1966
- Model 150H approved August 12, 1966
- Model 150J approved May 2, 1968
- Models 150K and A150K approved June 5, 1969
- Models 150L and A150L approved June 8, 1970
- Models 150M and A150M approved May 6, 1974
- Models 152 and A152 approved March 16, 1977

(2) Airworthiness design requirements:

(i) Airworthiness Design Standards:
The certification basis of the Cessna Model 150/152 Series is Part 3 of the Civil Air Regulations dated May 15, 1956, as amended by 3-4. In addition for 1979 Models 152 and A152 and on, FAR paragraph §23.1559 effective 1 March 1978 was added, and for 1985 Models 152 and A152 and on, FAR paragraph §23.1545(a) at amendment 23-23 dated 1 December 1978 was added.

This is an acceptable certification basis in accordance with NZCAR Part 21B Para §21.41 and Advisory Circular 21-1A, because CAR 3 was the predecessor to FAR 23 which is the basic standard for Normal Category Airplanes called up under Appendix C. There are no non-compliances and no special conditions have been prescribed by the Director under §21.23.

(ii) Special Conditions:
Nil

(iii) Equivalent Level of Safety Findings:
1977 Model 150 and 152:
CAR 3.757 Airspeed Indicator; CAR 3.778(a) Operating Limitations – The use of indicated instead of calibrated airspeed was accepted provided the approved calibration data presented in the Pilot's Operating Handbook is available to the pilot. ASI calibration data must be predicated on flight test.

(iv) Airworthiness Limitations:
Nil

(3) Aircraft Noise and Engine Emission Standards:

(i) Environmental Standard:
The Models 152 and A152 have been certificated under FAR Part 36, including Amendments 36-1 through 36-5.

(ii) Compliance Listing:
Report ET-78-131 – Noise Level Certification for Light Propeller Driven Aircraft per FAR 36 (Amdt. 1-10)/Model 152/A152 – Corrected Noise Level 66.3 dB(A)

Report ET-82-12 – Flyover Noise Analysis for FAA Certification Model 152/A152

See Advisory Circular 36-1H Appendix 7 and Flight Manuals (Section 4).

Model:	MTOW:	Engine:	Propeller:	RPM:	Noise Levels	
					MdbA	CdbA
152	1670	O-235-L2C	1A102/TCM6955	2550	65.8	64.8
152/A152	1670	O-235-L2C	1A103/TCM6958	2550	66.7	66.3

(4) Certification Compliance Listing:

Cessna Report DM 150A-0 – Type Inspection Report Model 150A
Cessna Report S-150B-0: Model 150B – Basic Data
Cessna Report S-150B-33: Model 150B – Structures Substantiation Summary
Cessna Report S-150C-0: Model 150C – Basic Data
Cessna Report S-150C-33: Model 150C – Structures Substantiation Summary
Cessna Report DM 150C-0: - Type Inspection Report Model 150C
Cessna Report S-150D-0: Model 150D – Basic Data
Cessna Report DM 150F-0: Engineering Flight Test Report Model 150F
Cessna Report DM 150G-0: Type Inspection Report Model 150G
Cessna Report DM 150H-0: 1968 Model 150 Changes
Report S-150J-33 – Substantiation, Critical Loads & Structural Materials Summary
Cessna Report DM 150J-0 – 1969 Model Changes
Cessna Report S-150L-35(71): Model 150L – Fatigue Analysis
Cessna Report DM 150M-0: Certification of the 1975 Model Changes

Cessna Report S-152-33 (78) – Model 152 – Substantiation, Critical Loads & Structural Materials Summary – Revision L (Includes Memo 80M2/7-4 which lists the various Cessna 152 structural reports)

Cessna Report DM-152-0 – Revision B – Certification of the 1978 Model 152
DM-152-0 Addendum #2 – Approval of the 1979 Model Changes to the 152
DM-152-0 Addendum #4 – Approval of the 1980 Model Changes
DM-152-0 Addendum #5 – Approval of the 1981 Model Changes
DM-152-0 Addendum #6 – Approval of the 1982 Model Changes
DM-152-0 Addendum #7 – Approval of the 1983 Model Changes
DM-152-0 Addendum #10 – Approval of the 1984 Model Changes
DM-152-0 Addendum #11 – Approval of the 1985 Model Changes

(5) Flight Manual:

CAA AIR Number:	***Cessna Publication:***	***Title:***
AIR 2757	P187-13	Model 150 (1959-60) Owner's Manual
AIR 139	P220-13	Model 150A (1961) Owner's Manual
AIR 3671	D123-13	Model 150B (1962) Owner's Manual
AIR 3672	D156-13	Model 150C (1963) Owner's Manual
AIR 2424	D208-13	Model 150D (1964) Owner's Manual
AIR 2425	D251-13	Model 150E (1965) Owner's Manual
AIR 2426	D326-13	Model 150F (1966) Owner's Manual
AIR 2427	D397-13	Model 150G (1967) Owner's Manual
AIR 2428	D518-13	Model 150H (1968) Owner's Manual
AIR 2600	D624-13	Model 150J (1969) Owner's Manual
AIR 3663	D727-13	Model 150K (1970) Owner's Manual
AIR 3664	D836-13	Model 150L (1971) Owner's Manual
AIR 3665	D901-13	Model 150L (1972) Owner's Manual
AIR 238	D962-13	Model 150L (1973) Owner's Manual
AIR 3666	D1013-13	Model 150M (1974) Owner's Manual
AIR 254	D1033-13	Model 150M (1975) Owner's Manual
AIR 2621	D1055-13	Model 150M (1976) Pilot's Operating Handbook
AIR 2622	D1080-13	Model 150M (1977) Pilot's Operating Handbook
AIR 3056	D740-13	Model A150K (1970) Owner's Manual
AIR 3667	D839-13	Model A150L (1971) Owner's Manual
AIR 3668	D900-13	Model A150L (1972) Owner's Manual
AIR 2497	D963-13	Model A150L (1973) Owner's Manual
AIR 2579	D1014-13	Model A150M (1974) Owner's Manual
AIR 286	D1034-13	Model A150M (1975) Owner's Manual
AIR 2623	D1056-13	Model A150M (1976) Pilot's Operating Handbook
AIR 2624	D1081-13	Model A150M (1977) Pilot's Operating Handbook
AIR 2049	D1107-13	Model 152 (1978) Pilot's Operating Handbook
AIR 2745	D1136-13PH	Model 152 (1979) Pilot's Operating Handbook
AIR 2746	D1170-13PH	Model 152 (1980) Pilot's Operating Handbook
AIR 2156	D1190-13PH	Model 152 (1981) Pilot's Operating Handbook
AIR 2180	D1210-13PH	Model 152 (1982) Pilot's Operating Handbook
AIR 2197	D1229-13PH	Model 152 (1983) Pilot's Operating Handbook
AIR 2246	D1249-13PH	Model 152 (1984) Pilot's Operating Handbook
AIR 3040	D1270-13PH	Model 152 (1985) Pilot's Operating Handbook
AIR 2032	D1108-13	Model A152 (1978) Pilot's Operating Handbook
AIR 2684	D1137-13PH	Model A152 (1979) Pilot's Operating Handbook
AIR 2685	D1171-13PH	Model A152 (1980) Pilot's Operating Handbook
AIR 2148	D1191-13PH	Model A152 (1981) Pilot's Operating Handbook
AIR 2181	D1211-13PH	Model A152 (1982) Pilot's Operating Handbook
AIR 2329	D1230-13PH	Model A152 (1983) Pilot's Operating Handbook
AIR 3669	D1250-13PH	Model A152 (1984) Pilot's Operating Handbook
AIR 3670	D1271-13PH	Model A152 (1985) Pilot's Operating Handbook

(6) Operating Data for Aircraft:

(i) Maintenance Manual:

Cessna 100 Series (1953-1962) Service Manual – Publication D138-13
Cessna 100 Series (1963-1968) Service Manual – Publication D637-13
Cessna Model 150 (1969-1976) Service Manual – Publication D971-13
Cessna Model 150 (1977) Service Manual – Publication D2011-13
Cessna Model 152 (1978-1985) Service Manual – Publication D2064-13

Cessna 100 Series Continued Airworthiness Program – Publication D5133-13

(ii) Current service Information:

Service Bulletins/Service Letters

(iii) Illustrated Parts Catalogue:

Cessna Model 150 (1959-1969) Parts Catalog – Publication P438-12
Cessna Model 150 (1970-1977) Parts Catalog – Publication P691-12
Cessna Model 152 (1978-1985) Parts Catalog – Publication P692-12

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

Textron Aviation Publications are now available through the Textron Aviation Technical Publications website at https://ww2.txtav.com

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	***To be determined on an individual aircraft basis***
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		***To be determined on an individual aircraft basis***	
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 (8) Coolant Temp	CAR3 §3.655(a)(1) N/A – No mach limitation CAR3 §3.655(a)(2) CAR3 §3.655(a)(3) CAR3 §3.655(b)(1) CAR3 §3.655(b)(4) CAR3 §3.655(b)(2) N/A – Air cooled	(9) Oil Temperature (10) Manifold Pressure (11) Cylinder Head Temp. (12) Flap Position (13) U/c Position (14) Ammeter/Voltmeter (15) CO indicator	N/A – less than 250 hp N/A – not turbo, not CSP N/A – less than 250 hp CAR 3 §3.338 N/A – fixed gear CAR §3.681 ***To be determined for each individual aircraft***
91.511	Night VFR Instruments and Equipment		***To be determined on an individual aircraft basis***	
91.513	VFR Communication Equipment		***To be determined on an individual aircraft basis***	
91.517	IFR Instruments and Equipment		***To be determined on an individual aircraft basis***	
91.519	IFR Communication and Navigation Equipment		***To be determined on an individual aircraft basis***	
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 9 Passengers Not Applicable – less than 9 Passengers Not Applicable – less than 20 Passengers Not Applicable – less than 61 Passengers	
91.529	ELT - TSO C126 406 MHz after 22/11/2007		***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	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		Not Applicable – Not turbojet or turbofan	
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 / Restraints – Shoulder harness flight-crew seats		***To be determined on an individual aircraft basis***
135.357	Additional Instruments (Powerplant and Propeller)		***To be determined on an individual aircraft basis***
135.359	Night Flight	Landing light, Pax compartment	***To be determined on an individual aircraft basis***
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		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. Rules may have changed since then and compliance should be checked individually.

3. Some means of compliance above are specific to a particular model/configuration. Compliance with Part 91/135 operating requirements should be checked in each case, particularly oxygen system capacity and emergency equipment.

Attachments

The following documents form attachments to this report:

Three-view drawing Cessna Model 150J
Three-view drawing Cessna Model 152
Copy of FAA Type Certificate Data Sheet Number 3A19

Sign off

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David Gill	Checked – Kavita Vanmari
Team Leader Airworthiness	Airworthiness Engineer

Appendix 1

List of Type Accepted Variants:

Model:	*Applicant:*	*CAA Work Request:*	*Date Granted:*
150, 150A, 150D, 150F, 150G, 150H		AC 21-1.2/NZCAR Part 21 Appendix A(c)	
150L, A150L (1972-1974), 150M, A150M		AC 21-1.2/NZCAR Part 21 Appendix A(c)	
152 (1978-1984), A152 (1978-1983)		AC 21-1.2/NZCAR Part 21 Appendix A(c)	
150J	P R & C M McGregor	98/21H/8	10 December 1997
152 (1985)	Manawatu Districts Aero Club	8/21B/30	26 June 2008
All 150/152	Textron Aviation Inc.	18/21B/10	19 September 2018